

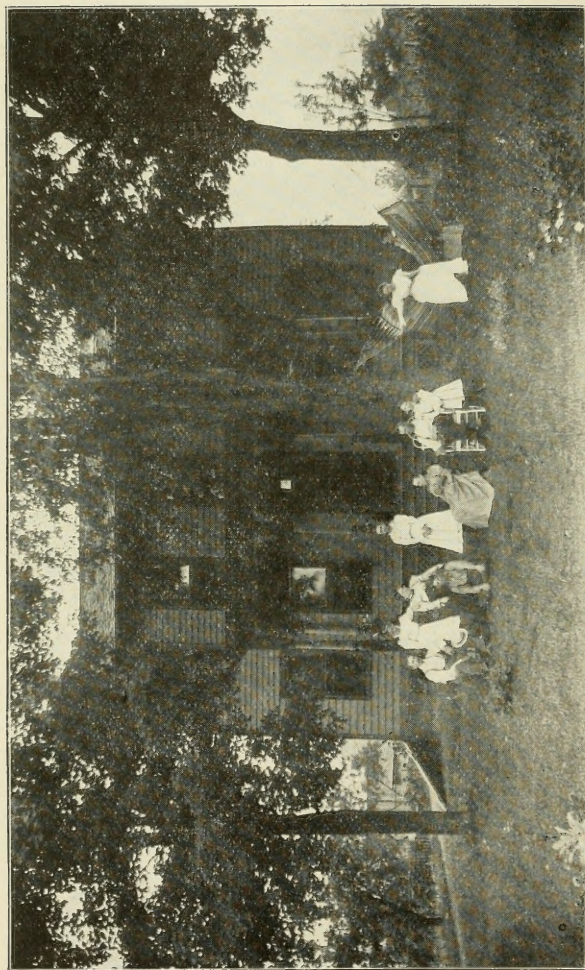


Class SB 205

Book A4 M9

Copyright N^o

COPYRIGHT DEPOSIT.



ALFALFA PLACE — THE AUTHOR AND HIS FAMILY.

ALFALFA

“THE GRASS”

IN OHIO

Where, How and Why to Grow It

ALLEN O. MYERS

Darby, Cincinnati Weekly Enquirer

ALFALFA PLACE, FRANKLIN COUNTY, OHIO

PRICE ONE DOLLAR

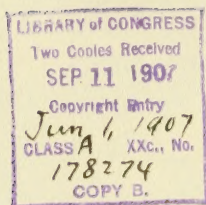
3
3 3 2
3 2
3 3
3 3

COLUMBUS, OHIO :

THE F. J. HEER PRINTING CO.,

1907

SB205
A4M9



Copyright Granted in 1907
to
ALLEN O. MYERS
Ohio



ALFALFA

"THE GRASS"

Giving information based on the successes and failures of the grower, showing the soils on which to grow it, the enormous yields, the feeding value, its worth as a fertilizer and restorer of the fertility of worn out soils, pasturing stock, its cultivation, and how to harvest and cure it.

By ALLEN O. MYERS

DEDICATION.

This volume is respectfully dedicated to the officers, members, workers and lecturers of the Ohio Farmers' Institutes, which in the last twenty years have contributed more than all other causes combined, except the farmer himself, to the advancement and progress of agriculture in our state.

TABLE OF CONTENTS.

CHAPTER.	TITLE.	PAGE.
	Dedication	5
	The Reason Why.....	9
I.	In the Beginning.....	13
II.	Alfalfa in Ohio.....	17
III.	Description of the Plant, Seed, etc.....	27
IV.	From City to Country.....	33
V.	A Description of the Land.....	37
VI.	How I Came to Grow Alfalfa.....	47
VII.	The Land that will Grow Alfalfa in Ohio.....	57
VIII.	Preparing the Land for Alfalfa.....	67
IX.	When to Sow Alfalfa in Ohio.....	75
X.	The Seed and the Amount to Sow.....	81
XI.	Care and Culture of Alfalfa in Ohio.....	89
XII.	Making Alfalfa Hay in Ohio.....	97
XIII.	The Enemies of Alfalfa in Ohio.....	107
XIV.	Pasturing Alfalfa in Ohio.....	115
XV.	The Value of Alfalfa and its Future in Ohio as compared with Grain and other Grasses.	123
XVI.	Ohio Grown Alfalfa Seed.....	135
XVII.	Alfalfa as a Soil Renovator—Fertilizer and Manure	143
XVIII.	Alfalfa in Rotation of Crops.....	157
XIX.	Reseeding Alfalfa in Ohio.....	165
XX.	Alfalfa in the Towns and Cities of Ohio.....	169
XXI.	Alfalfa and Moisture.....	173
XXII.	Alfalfa and Farm Values in Ohio.....	181
XXIII.	Conclusion	185

THE REASON WHY.

“**O**F making books there is no end.” One of the Bible sages wrote this over two thousand years ago, before the art of printing was invented, when all books were laboriously produced by hand, on skins or other rude materials. Had he lived in our day and seen the flood of books and mass of printed matter turned loose daily upon a patient and long-suffering world he could not have found language to express his amazement.

In setting adrift this waif upon the great ocean of literature, my sole ambition, and earnest hope, is that it may carry a message of promise, of profit and pleasure to every farmer in Ohio before its mission is fulfilled and it sinks into that oblivion which, in the natural order of things, must swallow up the book and its author.

In seven years spent in the culture of alfalfa, its possibilities and its many wonderful and magnificent qualities as a farm product, and as a feed for everything that wears hair or feathers, has grown upon me until I begin to realize that it would restore thousands of acres lying idle and waste in Ohio, and make them productive and valuable, and thus increase the profits and comforts of life for the honest and sturdy tillers

of the soil. As these truths grew upon me I felt that I had no right to keep this knowledge and its benefits for my own selfish use, but that I could do no greater good in my day and generation than by sending this message to the fireside of every farm house and let all who will enjoy the rewards that must follow the culture of the grandest grass that the creator has given to man and all animals that minister to his comforts.

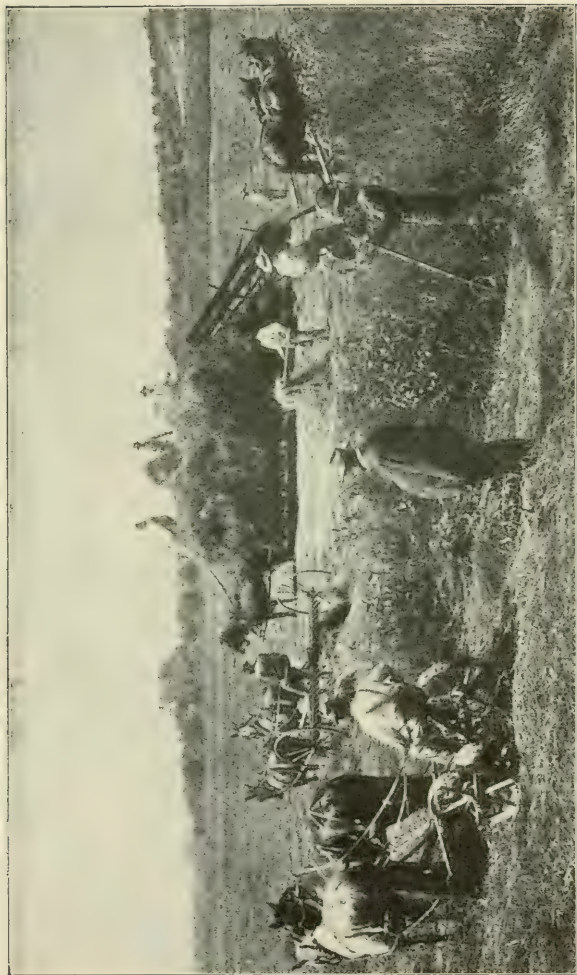
For years, unfortunately, the farmer who desired to grow alfalfa has been deterred from making the effort by the many obstacles that have been conjured up by corporations and combines and by the "scientific fundamentals" of professional agriculturists, who plow in axminster carpets, sow on mahogany desks, spit in porcelain spittoons, plow in revolving chairs, and harvest their crop, every month, when they draw big, fat salaries from some other fellow's earnings. One reason why I have written this book is to save the real farmer from the delusions of the scientific theorist and selfish interests, and show him that growing alfalfa is a simple and easy task, based upon practical experience and common sense.

ALLEN O. MYERS.

Alfalfa Place, Franklin County, Ohio, April 7,
1907.

In the Beginning.

(11)



EVERYBODY WORKS WITH FATHER, MAKING ALFALFA HAY, FARM SCIENCE.

CHAPTER I.

IN THE BEGINNING.

"In the beginning God created the heavens and the earth."

"And God said let the earth bring forth grass."

"And the earth brought forth grass."

GENESIS, Chap. I.

From the beginning, Alfalfa, lucerne, medic or clover has held the first place among the grasses of the old world, and in the earliest annals of the race, in central Asia, its culture and importance was recognized and recorded. The Greeks and Romans introduced it into Europe, and the Arabs carried it to Africa and Spain and gave it the name by which it is now known, "Alfalfa," which means "the grass." In Africa it is now known as "alfa grass." This name was given by a race that has produced the best breed of horses in the world. The name "Alfalfa" was given because it was superior as feed and pasture to any other grass that grew.

One of the earliest mentions of it in modern history is in Gibbon's Roman Empire. He says the introduction of lucerne (Alfalfa) into Italy from Persia, by the Romans, gave great encouragement to agriculture, by increasing the number of cattle and increasing the fertility of the soil and more than doubling the producing capacity of the land. In this brief

summary this great historian has told of the value of alfalfa to agriculture wherever it has been grown.

Recent investigations show that lucerne was brought to several Eastern states in this country from Europe and grown as early as 1800. But the people knew little about its merits and nature. Cattle and sheep easily bloated upon it and there was a prejudice against it on this account, and by many it was looked upon as too poisonous and dangerous for use upon the farm, and it was quickly crowded out by common clover. In addition, the rapid and continuous growth of Alfalfa made it too laborious and difficult to cut with the scythe. The modern implements used in farming have not only doubled but multiplied the production and possibilities of alfalfa, the grandest grass that the Bountiful Giver of all good has ever instituted for the farmer, to lighten the toils of the tiller of the soil and double the rewards of his patient and intelligent labor.

Alfalfa in Ohio.

(15)



ALFALFA IN BLOSSOM.

CHAPTER II.

ALFALFA IN OHIO.

The earliest attempt to grow alfalfa in Ohio was by a farmer in Noble County in 1872. Seed had been sent him from California, with directions for sowing, but climate and soil conditions were so different that he failed, and, not knowing its value, he gave up the attempt in disgust.

The Wing Brothers, of Champaign County, having learned the value of alfalfa in the West, began growing alfalfa in that county in 1887, and have had uniform success since, and have increased their acreage yearly until they became the largest growers of alfalfa in the state. In 1890 Hon. Lowell Roudebusch, of Clermont County, who had been living at various places in the West, and learned of the great value of alfalfa as a farm product, returned to Ohio and induced several to plant alfalfa in the rolling land around Camp Dennison. The effort was a success, and it has been grown there ever since, and has done well in that section of the state. In 1894 Dr. Becket, who lives on the limestone divide in Franklin County, between the Scioto and Olentangy rivers, made a visit to California, and brought back ten pounds of alfalfa seed, which he sowed in an old orchard. He got a stand, and used it for years as a hog pasture. It seeded, and

the wind blew the seed far to the northeast, and you can find alfalfa in with the sweet clover in the hard gravel along the roadsides and the fences.

But alfalfa did not begin to attract the general attention of Ohio farmers until 1900. Many began to learn that it would be a valuable asset upon every farm, but the general impression was that it could only be grown upon rich bottom lands and under ideal conditions. This view was encouraged by the government authorities, in all of their bulletins relating to alfalfa.

In 1902 Director Chas. E. Thorne, of the Ohio Experiment Station, said, "the results of experiments with alfalfa at this station have been chiefly negative"; and Mr. J. E. Wing, who has been quoted as the only authority in Ohio on alfalfa, wrote, "Alfalfa does not seem to be adapted to poor soils in Ohio." These official statements discouraged and squelched the budding desire to attempt to grow alfalfa. But interest in the possibilities of alfalfa continued to grow, and, refusing to be daunted by official prohibition and "scientific intimidation." Farmers in all sections of Ohio began growing alfalfa on all kinds of soil with the most astonishing and most gratifying success. Their efforts were encouraged by such farm papers as the *Weekly Enquirer*, which has persisted, for five years, in presenting in each issue all the data and information that could be gathered to help those farmers who wished to grow alfalfa.

In 1903 Mr. Jos. E. Wing modestly wrote:

"Perhaps we have on our farm half of the alfalfa in the state." If Mr. Wing had 100 acres in alfalfa on "rich black land," on which he said it could only be grown, there was only 200 acres of alfalfa in Ohio. There is more than that now. Two years ago Mr. John M. Jamison, of Ross County, a successful grower of alfalfa on hill land, and the writer induced the Secretary of the State Board of Agriculture to include "alfalfa" in the crop statistics returned under oath by the assessors. The returns for 1905 were made by the assessors in May, 1906, and the statistics published by the Board from these returns in August 1906 and 1907 show that alfalfa is grown in the following counties. The table, giving statistics for two years, are valuable, and show the rapid increase in acreage, and the growing success in raising alfalfa:

ALFALFA IN OHIO.

TABLE SHOWING THE ACREAGE AND YIELD BY COUNTIES FOR THE YEARS 1905 AND 1906.

Counties.	1905.		1906.	
	Acres.	Tons.	Acres.	Tons.
Adams	15	19	8	41
Allen	54	127	65	102
Ashland			3	6
Ashtabula	1	5	1	4
Athens	357	977	332	901
Auglaize	77	169	135	261
Belmont	35	71	49	79

ALFALFA IN OHIO — Continued.

Counties.	1905.		1906.	
	Acres.	Tons.	Acres.	Tons.
Brown	56	71	36	68
Butler	200	588	416	1,032
Carroll			4	
Champaign	1,053	2,559	1,095	2,755
Clark	226	495	315	720
Clermont	504	931	564	1,116
Clinton	201	543	145	445
Columbiana	1	1	2	
Coshocton	31	104	62	231
Crawford	7	13	7	18
Cuyahoga			1	
Darke	65	136	158	250
Defiance	18	52	25	69
Delaware	226	502	234	525
Erie	90	218	120	308
Fairfield	19	53	27	96
Fayette	355	922	425	1,341
Franklin	313	793	387	1,001
Fulton	29	111	63	171
Gallia	46	84	51	107
Geauga	1	2	2	2
Greene	159	331	234	446
Guernsey	40	83	43	89
Hamilton	965	2,240	1,244	3,175
Hancock	9	7	22	22
Hardin	107	237	94	253
Harrison	19	186	23	63
Henry	8	17	8	21
Highland	139	313	135	370
Hocking	114	319	100	370
Holmes			4	10
Huron	3	13	6	19
Jackson	6	6		
Jefferson	10	20	17	33
Knox				
Lake	37	39	32	29

ALFALFA IN OHIO—Continued.

Counties.	1905.		1906.	
	Acres.	Tons.	Acres.	Tons.
Lawrence	1	3	4	10
Licking	138	336	185	536
Logan	813	1,976	1,209	2,568
Lorain	15	49	11	16
Lucas	197	706	318	821
Madison	542	919	525	1,148
Mahoning	1	6		
Marion	5	16	28	64
Medina	7	18	7	22
Meigs	32	61	27	59
Mercer	60	204	58	186
Miami	69	162	114	253
Monroe			3	5
Montgomery	346	981	377	798
Morgan	62	214	90	309
Morrow	30	77	29	98
Muskingum	16	37	71	156
Noble	94	154	32	67
Ottawa	115	276	237	629
Paulding			22	37
Perry	8	78	8	12
Pickaway	43	101	26	44
Pike	60	84	10	7
Portage			1	3
Preble	278	436	330	679
Putnam	19	39	9	22
Richland			7	25
Ross	491	1,075	500	1,250
Sandusky	35	65	39	142
Scioto	19	82	57	105
Seneca	98	261	103	287
Shelby	5	13	74	121
Stark	892	1,149	769	951
Summit	27	4	12	3
Trumbull			1	5
Tuscarawas	1	4	9	32

ALFALFA IN OHIO — Concluded.

Counties.	1905.		1906.	
	Acres.	Tons.	Acres.	Tons.
Union	163	422	172	438
Van Wert	19	57	10	32
Vinton				
Warren	236	716	334	827
Washington	69	175	69	302
Wayne	14	43	7	24
Williams	97	265	121	396
Wood	117	275	254	485
Wyandot			59	119
Totals	10,832	24,890	13,025	29,612

There were 10,832 acres of alfalfa in Ohio in 1905, producing 24,890 tons of hay. Seventy-six of the eighty-eight counties are growing alfalfa. Twelve counties—Ashland, Carroll, Cuyahoga, Holmes, Knox, Monroe, Paulding, Portage, Richland, Trumbull, Vinton and Wyandot—make no returns, although one of the most successful alfalfa farmers in the state lives in Knox county. These statistics show that alfalfa is being successfully grown in all kinds of soil and under all conditions in Ohio.

In 1891 there was the same doubts, skepticism and uncertainties about alfalfa in Kansas that there is in Ohio, but there were 34,384 acres in alfalfa in Kansas that year. In 1902 there were 777,635 acres, and last year, 1906, there were 1,273,000 acres of alfalfa re-

turned in Kansas, and one county, Jewell, returned 38,750 acres. It must be a marvelous grass to spread so rapidly. The days of timothy and red clover as leading grass crops are numbered in Kansas, and this fact is a promise that alfalfa will soon spread over Ohio, and its purple blossoms will perfume the air from lake to river, and its rich nutriments will multiply the live stock, double the profits of agriculture, increase the value of land and lessen the labors of the husbandman.

A comparison of the figures for 1905 and 1906 in the table shows the rapid increase in acreage in Ohio. It has started, and, like clover, will spread as rapidly and as widely.

**Alfalfa in Ohio. -- Description of the
Plant. -- Seeds of Various Kinds.**

(25)

CHAPTER III.

ALFALFA IN OHIO—DESCRIPTION OF THE PLANT— SEEDS OF VARIOUS KINDS.

The botanical name of alfalfa is *Medicago Sativa*. It is a legume and belongs to the family of the clovers, pease, beans and vetches. This class of plants are of great value to the farm, because of their capacity to gather nitrogen from the air, and other plant food from the earth, and restore the fertility of the soil, and in this gracious provision of the All Wise Agriculturist of the Universe, alfalfa heads the list and surpasses all other kinds of grasses—when the stand is not too thick.

In Ohio alfalfa attains a height of 48 inches at its first cutting in June, and thereafter it may be cut for hay in July, August and September, averaging for the four cuttings 48, 42, 38 and 24 inches, making an average of over 12 feet of grass each year.

It is a perennial, with long, slender stems, on which clusters of leaves form, from the base to the top, when not too thickly planted. The leaves form three in a group, something like red clover, but are longer and more pointed. When approaching maturity the stems become woody and send up slender spike, upon which the beautiful purple blossoms appear in clusters. The flower is very fragrant, and the bees revel in its sweets.

The seed pods form in spirals which curve like a snail's shell, and each pod contains from six to ten seeds. Under a strong glass the seeds look like a bean or a hog's kidney, and are as large again as clover seeds. They are a light yellow in color, when not weather stained. When the pods ripen they turn brown, and are ready to harvest. The leaves fall off, leaving the stem almost bare, with the seed pods on the stems.

There are several kinds of legumes that have some resemblance to alfalfa, but can not compare with it in feeding value or in production in Ohio. One is known as "Medicago Media," or intermediate lucerne, and another is the yellow or sand lucerne, "Medicago Falcato. They have no value for this state, and no attempt has been made to grow them in Ohio, knowingly.

Teher is another variety known as Turkestan, which farmers are warned against, as many have been deceived by buying Turkestan for alfalfa seed. It only grows about 18 inches high, and farmers who have planted it are greatly disappointed at its character and yield, because it failed to do all that it is known the genuine alfalfa will do. At a farmers' institute held at Wapakoneta, Ohio, two farmers said that their alfalfa grew only about 18 inches high. At the second day's meeting they brought in some of the seed, and it proved to be Turkestan instead of alfalfa. It had been sold to them for alfalfa seed, and they lost their money, time and the use of their land. There is such a demand for alfalfa seed and it has such a ready sale

and commands such a high price that unscrupulous dealers, with that criminal and brazen audacity that is one of the alarming characteristics of this greedy commercial age, palm off this bastard product as genuine alfalfa seed. Unfortunately we have no clean seed laws in Ohio to protect farmers as they have in Kentucky and other states. But the farmers need such a law, and need it quick, and it should be vigorously enforced, until an end is put to this kind of fake imposition.

In 1898 the United States Agricultural Department sent an agent to Russia to secure a foreign forage plant that would resist drought and freezing, and in Asia, from arid Turkistan to frozen Siberia, he found this plant flourishing. Seed was sent to the United States, and it was introduced in the arid regions of the West and the colder regions of the North. Here it has done fairly well, and men are raising it for seed which is being sold to innocent purchasers as alfalfa. The seed is smaller than alfalfa and larger than clover, and of a reddish yellow color, but no one but an expert can detect it, even with a magnifying glass. The Kansas Experiment Station says: "Turkestan has been tried here for several years, and it makes a weaker growth than alfalfa, is less able to withstand drought, winter killing and weeds, and yields less. Kansas farmers have no use for it." When you buy alfalfa seed be on your guard against having Turkestan seed palmed off upon you. The dealer knows the difference and should be held responsible. I write this plainly

and bluntly because seedmen are practicing this fraud intentionally. Only recently a seed dealer said to me: "I can't get any alfalfa seed, but I can get plenty of Turkestan. How would it do to sell that to the suckers?" I told him "It would be an infernal outrage." I made it stronger than that, but I guess that this language is strong enough for history and domestic consumption.

From City to Country.

(31)

CHAPTER IV.

FROM CITY TO COUNTRY.

I was born in a town, and once worked with an odd genius, a journeyman tailor, named Martin O'Connor, who was born in Ireland, but said that he could have been born in the United States, if he had said so. If I had had this wonderful power I would have been born in the country, and having been so born, my wish would be the sentiment expressed in that masterpiece, Gray's *Elegy*:

"Far from the maddening crowd's ignoble strife
His sober wishes never learned to stray
Although cool, sequestered vale of life
He kept the noiseless tenor of his way."

For forty years I lived in cities and spent an active life, as a newspaper writer as my chosen means of making a livelihood. As a political writer I was thrown into contact with public men and politicians. It was a hard, consuming life, and I yearned for the country and the fields. For a long time I had a half-formed purpose to move to the country, and as my children and family grew in number and years I resolved to move onto a farm for their good as well as my own. But as the years rolled on I could never persuade myself to make the change. In 1898, tired

mentally and worn out physically, some guiding spirit quickened my resolution, and I made up my mind that the way to move onto a farm was to move, and in the spring of 1898 I rented a small place of 32 acres and burned my city idols and bridges behind me and moved onto the land. I have more than realized my expectation. I have spent nine of the happiest years of my life. I found fresh air, pure water, green fields, singing birds, growing crops, poultry, regained my health by hard work, can eat, sleep and enjoy life like a sound man, and with Shakespeare I can say:

"And this, our life, exempt from public haunt
Finds tongues in trees, books in running brooks
Sermons in stones and good in everything."

I pity those dwellers in the cities who know not
what it is to

"Go forth under the open sky and list
To nature's teachings,"

A Description of the Land.

(35)



ALFALFA GROWN ON CLAY SOIL WITH GRAVEL HARD PAN.

CHAPTER V.

A DESCRIPTION OF THE LAND.

For the purpose of encouraging the growth of alfalfa in Ohio, it is necessary to give a description of the land and the farm upon which I have toiled and made a living for nine years. I do this because there are some "scientific farmers," who never saw the land, who know more about it than I do, and who persist in giving the soil a character it does not possess. There is no man, however wise and learned, who can sit in revolving chairs and draw a salary, who can tell every farmer what every foot of his farm is best adapted to produce. The farmer alone is best qualified and adopted by constant experience and contact with the soil to do this.

This farm is located eight miles north of Columbus, on the old Delaware pike. It is in Sharon township, and a mile east of the Olentangy river. The land is clay, rough and rolling, broken by the gullies which three little streams have cut in the soil. When I moved onto it, it had been farmed to death. All the fertility in the soil had been exhausted by frequent croppings and hauled away and sold in the nearest market. The year before I moved upon it all that twelve acres of oats produced was hauled off in one wagonload, I was told by the man who harvested the

crop. There was two acres of bottom land along one of the creeks, composed of loam three feet thick, underlaid by a bed of sand and gravel. This is an excellent corn land, and with manure and turning clover under last year produced 100 bushels of corn to the acre—the rest of the land with the same treatment will average 25 bushels of corn to the acre. The land is heavy, tough yellow clay, and in some places it has only four inches of soil, on a very stubborn hardpan. On all the high rolling places there is an outcropping of gravel, on which no crop that I have ever grown or tried to grow ever returned seed or paid for the labor until I planted it in alfalfa.

In short, most of the ground was as poorly adapted to farming purposes as any land in Ohio, and yet I am told officially and scientifically that I live on the bottoms of the Olentangy river; that the land is "limestone" soil, and that is "ideal" for raising alfalfa. There is lime in the clay, as there is in all clays, but there is no limestone in, under or near the soil, because it was ground out by the ice and carried south by the waters, ages ago, to make the Pickaway plains and the rich bottom lands in the Scioto valley. If this is "ideal land" for raising alfalfa, then there are hundreds of thousands of acres of "ideal land" in Ohio, that will not raise enough of any crop to pay for the seed and tillage that will raise splendid crops of alfalfa, and by so doing can be made to pay for themselves in four years, and double the value of every acre for stock and grazing purposes.

The certainty of growing alfalfa successfully upon the hillsides and hill tops in clay and sandy soils is the message that I wish to convey to every farmer in Ohio.

For several years the Bureau of Soils of the United States Agricultural Department has been making a soil survey of the territory in which I live. The work was completed, and a report made in 1906. This work is entitled the "Soil Survey of the Westerville Area." The territory in this area composes 475 square miles. It lies in the counties of Franklin, Delaware, Licking, Union and Madison, between the 82 and 84 degrees west longitude and 40 and 41 degrees north latitude, and is the geographical center of the state. This land is drained by the Scioto and Olentangy rivers and Alum and Walnut creeks. These streams flow southeast about five miles apart. The slope is 100 feet to the mile, and the valley ranges in depth from 100 to 200 feet. There are numerous small lateral streams that drain into the ones named, cutting the land into abrupt valleys. In many places the land is too steep to plow. The report says:

"PHYSIOGRAPHY AND GEOLOGY."

"The Westerville area consists of a comparatively level plain having a slight fall to the south. The maximum elevation of 1,140 feet above sea level is reached in the southeast corner of Delaware County, on the eastern edge of the map, while the least elevation is

found 17 miles southeast. The formation, with the possible exception of a very narrow strip on the east bank of the Scioto, has been covered with glacial material, and the prevailing type of soil, the Miami clay loam, shows no recognizable difference in character from that covering the central and eastern parts of the area surveyed. The rock is not exposed except along the Scioto river, where it is quite extensively quarried for building purposes.

"The Huron shales, the next highest in the geological scale, cover the greater portion of the area, extending in a broad belt from north to south. These blue shales constitute much of the most easily eroded rocks of the area, and the cutting of the streams has resulted in producing a rougher, more underlating topography, especially near the edge of the escarpment, where the short lateral watercourses join the main stream.

"The rocks of the Waverly group are confined to the eastern and northeastern parts of the area. They consist of shales and a fine sandstone, in the latter of which a quarry has been opened at Sunbury. These rocks, like those of the underlying Huron shales, are covered with a blanket of glacial drift and enter into composition of the soils only as far as their residual material has been mixed and ground up and left in an altered state by the passage of the glaciers. The Miami clay loam is here, as elsewhere, the principal type."

SOILS.

The soil conditions of the Westerville area are quite uniform, and the only four distinct types have been recognized.

The following table gives the relative and actual extent of each of the types:

AREAS OF DIFFERENT SOILS.

Soil.	Acres.	Per cent.
Miami clay loam.....	267,264	87.8
Miami loam	17,856	5.9
Miami black clay loam.....	16,128	5.3
Miami gravelly loam.....	3,136	1.0
Total	304,384	

MIAMI CLAY LOAM.

The soil of the Miami clay loam, to an average depth of 10 inches, possesses a fine uniform silty texture, exhibiting little variation in the most widely separated parts of the area. Though the soil contains a relative high percentage of clay, the particles are so masked by the silt that the clayey characteristics of a sample as a whole are not noticeable when in a normal state of moisture. There are sometimes present a few granules of shale or limestone of the size of coarse sand or fine gravel, giving to the mass a very slightly gritty feel. These can oftentimes be broken down between the thumb and finger. Very little stone occurs in the soil or subsoil of this type, except along

the escarpments bordering nearly all the streams and bottom lands. In these situations the glacial gravel is exposed, and a band of from 2 to 10 rods wide of more or less gravelly soil results. Where this is of sufficient width to indicate on the map, it appears as Miami gravelly loam. The surface color varies from a light yellowish brown in locations where natural drainage is best, to a dark brown in areas of slight depression and at the line of contact with Miami black clay loam. The texture of the soil in the latter instances is somewhat heavier, the subsoil remaining about the same.

"The subsoil is a compact silty clay, slightly mottled with dark brown or bluish clay in some instances, but the color is usually a uniform brownish yellow. The subsoil becomes gradually heavier with increasing depth, and *a few chips of shale or limestone are sometimes found*. Except along the streams, there is but little stone or gravel in the subsoil, until the glacial till or boulder clay is reached at a depth of from 3 to 6 feet.

"Miami clay loam is the predominating type in point of distribution, and is found in all parts of the area surveyed, forming 87.7 per cent of the entire area of the sheet. The topography varies somewhat. Along the principal streams there is often an abrupt fall of from 20 to 50 feet from the uplands down to the bottoms, the escarpment line being more or less dissected by small lateral streams. Upon the upland, from two to five miles back from the main streams,

the surface is slightly undulating. The natural drainage in the latter situation is usually deficient, and to improve this condition a great many miles of open ditches and tile drains have been put in. Even those portion of a type where a fairly undulating surface prevails requires a more thorough drainage than they generally get.

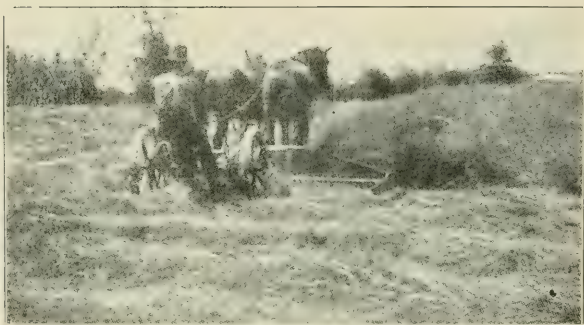
"The Miami clay loam is derived from a combination of the residual material, caused by the weathering of the underlying rock, and the various assortment of materials subsequently brought down and distributed by the glaciers. In this work the glaciers are assisted by considerable volume of water from the melting ice.

"Most of this area is common yellow clay without any traces of limestone, and as such is found in all the counties of southern Ohio, and in every other county of the state." The term "clay loam" is confusing, as clay is the basis of all loams. The Century Dictionary says: "Clay is the material resulting from the decomposition and consequent hydration of crystal-character of rocks is the foundation of all clay soils, and not limestone. I give these statements from reliable authorities, to refute the persistent misstatement and insistent misinformation that alfalfa will only grow on "rich bottom lands or limestone soils." It will grow better, produce stronger and last longer on rolling clay soils with quick surface drainage than on bottom lands and rich black soils, and as well as on limestone soils. The report says that upon a portion

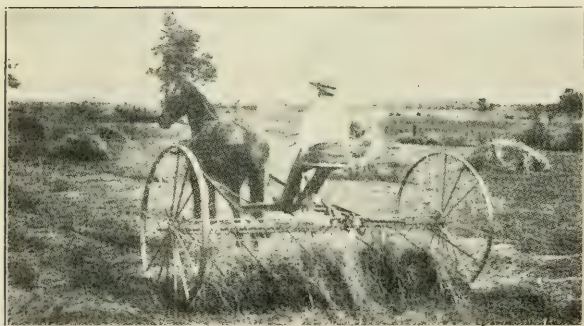
of this area the Miami gravelly loam, which is second bottom, alfalfa should do well. Much of this area contains a heavy blue clay subsoil, which the report says nothing about, and which the scientific gentlemen who are engaged in making the survey knew nothing about and never discovered. In some sections this blue clay is 20 feet under the ground, and in others in the northern part of Franklin County the blue clay is near the surface. This blue clay holds water like a cistern, and unless tiles are placed very thick drainage does little good, as the crops drown out in a wet season and burn out in a dry season, because the blue clay will not let the water down or the moisture come up. Alfalfa has been tried upon this kind of soil that is underlaid by blue clay, and has always failed. The roots of alfalfa will penetrate the hardest subsoil, but seem to sicken as soon as they strike the blue clay, and the plant dies or heaves out when the ground freezes. This is the only kind of soil in Ohio that I know of upon which alfalfa will not grow, except on swampy land. I do not believe that it will grow upon this soil even with the most thorough tile drainage, but experience and further trials when the plant becomes acclimatized may prove that I am wrong in this.

“How I Came to Grow Alfalfa.”

(45)



HARVESTING ALFALFA.



RAKING ALFALFA AFTER DINNER.

CHAPTER VI.

"HOW I CAME TO GROW ALFALFA."

After I moved on the farm the Spanish war began, and I tried growing garden truck, but failed on everything but beans. I put 20 acres in New York marrow-fat beans, and sold them green and dried and did very well. The second year I planted 25 acres in beans and did well, making about \$40 an acre. The third year I tried beans again, putting the crop in July 3rd, and on the 5th a cloudburst flooded the bean fields until they looked like a frog pond, and when the hot sun came out and the water dried up the clay ground baked down hard like a brick yard, and the beans all broke their backs getting through the crust and the crop was an absolute failure. It was too late to plant another crop, and the land was so poor that it would take years of patient and intelligent toil to restore the fertility of the soil so that I could rotate any crops. It did not belong to me, and when I came to the country I did not know whether I would like it or not, nor whether I could succeed and how long I would stay. I did not have much money saved, and I did not wish to invest in an occupation if I was going to fail and lose all I had. But I got a taste and liked it, and I made up my mind never to live in a city again, but end my days in the country and

on a farm; and I determined to try and make a successful farmer.

In the fall of 1900 I went to Kansas, where I spent four weeks traveling all over the state from the Missouri border to the Colorado line and from Nebraska to Indian Territory. In all sections and on all kinds of soils everyone that I talked to sang the praises of alfalfa, as a blessing to the farmer and a salvation to the state of Kansas. The testimony was so unanimous and so universal as to the riches and possibilities of this grand, glorious and gracious grass that I ate alfalfa, dreamed alfalfa, thought alfalfa and hiked back to Ohio to grow alfalfa. Kansas is a grand state, but I saw no possibilities there that could tempt me to sever my relations with my people and my native state. Ohio was heaven on earth for me, and the more that I travel and the more that I see of other states and other people the keener grows my affection and the greater my love for Ohio and her people, her traditions and her institutions. In Ohio I will tarry while I live, and when I die if I don't find a better country and a more congenial people I am coming back to Ohio to act as guardian angel of the alfalfa fields.

MY FIRST ATTEMPTS TO GROW ALFALFA.

I returned from Kansas in November, 1900. It was too late to plant alfalfa, but I began studying the question and gathering information. The printed matter published by the Ohio Experiment Station was

very limited, and conveyed the discouraging official information that alfalfa could only be grown in Ohio on rich bottom land. There was no rich bottom land on my place. It was rolling, gravelly clay and worn-out clay land, that had been cropped into sterility. I sent to the Kansas Experiment Station and got the Bulletins on the growth of alfalfa in that state. These said that alfalfa would do well on clay soils, and all other soils except wet and swampy land, and that it ought to be grown on land at least 15 feet from the water table to secure a permanent stand and secure best results. This was more encouraging. But there was a difference between growing alfalfa in eastern Kansas and the arid regions of the West. Different methods had to be pursued in seeding and time of planting. But I had an object lesson right across the road from my place that convinced me that alfalfa would grow on clay ground and do well.

A farmer named Milo Hines had a son in Idaho who had sent him 30 pounds of alfalfa seed. He had a piece of clay ground of three acres, located on a hillside sloping to the south. It was clay, full of stones and could not be plowed without washing badly. In 1895 he planted it without using manure or fertilizer, lime or inoculation. He went about it in a common-sense way and prepared the ground as he would for any grass seed and sowed it broadcast and got a stand, which has lasted for 10 years and has produced for each year an average of four tons to the acre, on

ground that was too poor to raise any kind of a grain crop. Last year a tenant turned his hogs in on it for pasture and they thrived amazingly, but he kept them on it too late in the fall and left no cover crop, and last winter, 1907, it froze out and the field was plowed up this spring and planted in corn, and it is one of the finest stands in the neighborhood. As long as care was taken of the field its vigor and yield never diminished.

After digesting all the information that I could get and profiting by the experience and success of Mr. Hines I made up my mind how to plant and when. I picked out three pieces of ground, which we will number 1, 2 and 3. There was half an acre in each piece. No. 1 was a clay gravel hill 25 feet above the level of the water at its highest point. The clay was tough and full of stones and hard to plow. I had never been able to raise anything on this piece of ground. It sloped towards the south and east, and when plowed it washed badly and packed hard. Poor as the land is on the farm, the three pieces selected were the worst and most unpromising on the place. No. 2 was a clay hill with a gravel outcropping that washed badly. It was on the opposite side of the brook, and not quite as high as the other, but was at least 20 feet to the water level. It sloped towards the west. No. 3 was near the barn, and I wished to use it for a poultry yard. It was heavy yellow clay with a southern exposure. All three pieces were

plowed in April and harrowed. No. 1 was seeded with five pounds of alfalfa seed sown broadcast and not covered. I saw that the seed was small, and if I covered it and the rain came a crust would form on the clay surface and the seed leaf could not penetrate the surface. My experience with the beans taught me this lesson. In a few days the seed sprouted after a rain, and the roots went down and the plants flourished and made rapid growth. No. 2 was planted a day later. The seed was sown broadcast and harrowed in, a crust formed and the field was the worst of the three, as over half of the plants could not get through the crust, and this piece never did as well as the others. No. 3 was seeded to oats. The oats were harrowed in, and then the alfalfa seed was sown broadcast and not covered. The alfalfa started before the oats and grew rapidly. In two weeks the alfalfa on all three pieces was four inches high. These tests satisfied me that alfalfa would grow on any land on the farm, without manure, fertilizer, inoculation or lime, and I determined to plant the bean field. A disk harrow was used on 10 acres, and it was then harrowed crossways with a spike tooth harrow. A drill was used on May 15 to seed four pecks of oats to the acre, and set to sow 10 pounds of alfalfa seed to the acre. The grass seed sprouts were turned back of the hoes so that the alfalfa seed would fall on loose ground and not be covered. I got a fair stand of oats for the amount sown, and the alfalfa did well, but I

made the mistake of letting the oats ripen instead of cutting for hay when in bloom. The drain on the soil in ripening the oats killed off some of the alfalfa, and wherever the oats were heavy the alfalfa was shaded and killed out. The oats were cut in July, and the top of the alfalfa was cut and bound in the oats. When the oats were removed the alfalfa flourished and soon covered the field. The alfalfa was not clipped, but the growth of 15 inches was left as a cover and the alfalfa came through the winter in splendid shape. After threshing the oats the straw with the alfalfa in it was eaten ravenously by the Jersey cattle and made splendid feed.

In addition to the bean field, another piece of two acres was plowed and sown to alfalfa without any cover crop. But a heavy rain packed the clay ground and there was only about half a stand.

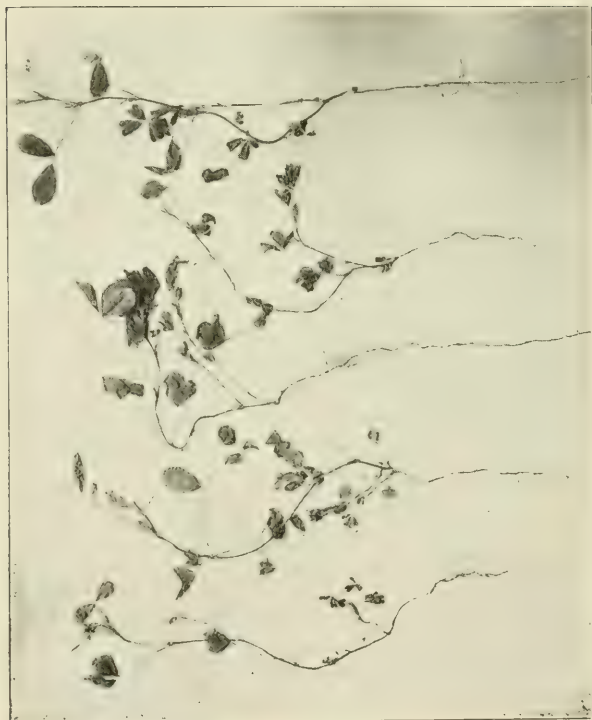
This was in 1901. In 1902 three crops of alfalfa were cut averaging five tons to the acre. In 1903 and 1904 three crops were cut each year.

In 1905 four crops were cut, measuring 12 feet 3 inches in the four cuttings, and in 1906 four crops were cut, measuring 12 feet 6 inches of grass, and one part of the field, the highest point, yielded 10 tons of alfalfa to the acre, while the average ran from two tons an acre the first cutting in 1905 and 1906 to one ton an acre the other three cuttings. Crops were cut in June, July and August and September. The one acre last year paid \$120.00. The third

cutting, in August, was sold to Mr. Harry Olmstead, in Columbus, for \$14 a ton out of the field. There was 4,500 pounds, for which \$31.50 was paid. All the alfalfa I could spare was sold in Columbus as soon as it was baled for \$20.00 a ton.

**The Land That Will Grow Alfalfa in
Ohio.**

(55)



BABY ALFALFA FOUR WEEKS OLD, PLANTED MAY 15, 1907.

CHAPTER VII.

THE LAND THAT WILL GROW ALFALFA IN OHIO.

Having secured a stand of alfalfa the first year on five different pieces of land in three different ways, as long as it was doing well nothing was done to it. All it needed was to be let alone. It was onto its job and was abundantly able to take care of itself, and it did.

This looked too easy. Many visited the stands, asked many questions, and when I told them how simple it was they shook their heads in doubt. About June 1, 1900, I found Mr. John Stoddart, a lawyer of Columbus, who owns a fine farm of 200 acres adjoining mine, on the place looking at the alfalfa fields Nos. 1 and 2. The grass was then 12 inches high. He asked how deep the roots were. We dug up a plant on No. 2. The root was 18 inches long, and had grown in six weeks and penetrated a hard clay gravel pan. Mr. Stoddart said: "This is marvelous: all the authorities say that it will only grow on rich bottom land or black soil." "Yes; I know what they say, and I have been guilty of treason, but there it is growing on poor clay land."

He planted five acres the next spring, and it is one of the finest pieces of alfalfa to be found anywhere. This spring he put in 12 acres more. When

I planted alfalfa in 1901 there were only three fields of alfalfa in the neighborhood; now there are 40. After three years the alfalfa was in its prime and had passed through all the stages that would render the experiment doubtful. From my own success I felt that alfalfa would grow and prove a profitable crop on all kinds of soil except wet lands, but I did not want to assert this without further tests.

In 1904 I induced Col. C. B. Adams, of the Boys' Industrial School, in Fairfield County, to plant five acres on a sandy hillside with a southern exposure. The field is at an angle of fully 30 degrees, and the soil is made up of decomposed old red sandstone. There is no limestone in or near that soil. It grew slowly, and the first year looked like a failure. No attention was paid to it. The second year they were surprised when the alfalfa came up strong, and last year, on May 22, the alfalfa was 42 inches high, and I pulled up one plant that had 53 shoots on it.

Other fields have been planted on the hilltop and in the valley in clay ground, and while two have been failures on account of the wet season and too much fertilizer and manure, a fourth has done well.

After these successful experiments I began to preach the gospel of alfalfa with confidence, because I saw it meant the redemption of hundreds of thousands of acres of land in the hill counties that are now almost worthless for agricultural and grazing purposes. The growth of alfalfa in southern Ohio means to more than double the value of the poor hill

farms that have been plowed and worked to death and washed away. It means that southern Ohio will be the greatest sheep country in the United States, and all kinds of stock will be doubled in numbers. With alfalfa, the soil will not only produce the food to sustain them, but prepare them for market in first-class shape at fully one-half the cost of present methods and feeds.

Having satisfied myself that alfalfa was adapted to all kinds of soils and was the best grass on earth to grow on poor, worn-out lands, producing most profitable crops, preventing hillsides from washing and restoring the fertility of the soil by its wonderful root system, I was intimidated on finding that the government officials sang but one song in chorus, and that was "that alfalfa must have rich loam, and a stand could only be secured by lime, inoculation, manure and fertilizer and sowing 30 pounds to the acre." In the face of all these authorities it was presumption for me to assert that alfalfa would grow on poor, waste, worn-out lands.

But being convinced that I was right I began proclaiming the truth, amidst the doubts, sneers and assaults of all the agents of the fertilizer, seed and other trusts. It sometimes seemed to me as though every agency selected to advocate the cause of agriculture and aid the farmer was hypnotized and seduced by some subtle influence to work for corporation interests and against the farmer.

To show that I am not alone in the correct position

that I have taken on the growth of alfalfa, the opinions of practical men who have had some real experience in raising alfalfa are given:

Hon. F. D. Coburn, Secretary of the Kansas State Board of Agriculture, says:

"While experts have been declaiming that alfalfa will only grow in certain soils and in certain climates, it has been proven that it will grow in nearly all soils and climates. It produces with a rainfall of 14 inches in one place, and flourishes with 65 inches in another. It grows 8,000 feet above the sea level, and in California it produces nine crops a year, producing 10 and 12 tons to the acre, below the sea level. It is being grown successfully in Vermont and Florida. New York has grown it for over 100 years in the clay and gravel. Nebraska grows it on the sand hills without plowing, as does Nevada on her sage-brush deserts. The worn-out cotton lands of Alabama and rich corn lands of Illinois and Missouri respond with profitable yields. While its accumulating nitrogen and the subsoiling it effects on making the land more valuable and giving to the crop-worn lands the priceless elements of which they have been robbed by a consciousnessless husbandry."

One by one the statements of so-called experts have been shown at fault. One says, "It will grow wherever corn will grow"; and from New York to Louisiana men will say that they are growing it where corn will not grow. Another declares "that it will not grow over a hardpan or gumbo subsoil." A New

York man shows a good field of alfalfa with roots over 15 feet long that passed through six inches of hardpan, which had to be broken with a pick in following the root. A Kansas farmer reports a fine stand and good yield on gumbo soil where corn was a failure. Another declares, "It must have a rich sandy loam," and forthwith from the deserts of Nevada, the sand hills of Nebraska and the thin, worn clay soils of the South come satisfactory reports of good yields. Such results are significant, indicating better returns than another crop brings from these varied soils and climates, and no farmer is justified in postponing the addition of alfalfa to his farm crops because of supposed hindrances of soil or climate."

Prof. W. T. L. Talrafeno, of the Maryland Agricultural College, says:

"The future of alfalfa in southern Maryland is bright, and with its general introduction will come a new era of prosperity. Live stock will take the place of tobacco farming. The fertilizing elements of the soil will be kept at home instead of being shipped abroad. Larger crops will be raised. The soil will be improved instead of impoverished, and worn-out farms will be restored to their original fertility."

The editor of the Rural New Yorker, in writing about alfalfa in central New York around Syracuse says:

"On farms I saw alfalfa growing on top of steep clay hills, which were useless for farming purposes unless loaded with manure, and now that alfalfa has

been started these hilltops have become the most profitable fields on the farm. At one place I saw a fair crop of alfalfa growing on 18 inches of soil over a rocky ledge and thriving. I have been told that this is the condition under which alfalfa will not grow, and yet seen it giving more forage than any red clover we can grow. This forage plant brings feed and fertility to the farm. It is like having a feed store and fertilizing factory drop out of the skies upon the farm to get a field of alfalfa started. It would not be a very bright farmer who continued to grow wheat or some other grain that would bring him \$25 an acre when a crop like alfalfa would guarantee him \$60 an acre."

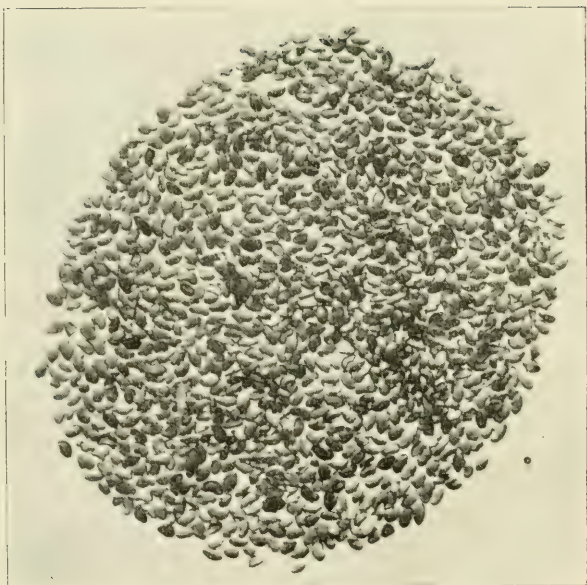
Alfalfa will not do well on a northern hillside. It will grow on a southern, western or eastern exposure, but it will do best on a southern exposure. It will do well on a gravelly clay soil. It will not produce so heavily, but it will last longer and produce a richer feed on gravelly soil than any other, and on the clay land it will produce a crop in dry weather when the alfalfa will fail on the sandy soil.

The higher the land from the water table the better the alfalfa will thrive. As a rule the roots will go down to rock or water, except on heavy clay soils, which hold moisture better than any other lands, and here the roots have a tendency to bunch, like red clover. In some cases where there is only six or eight inches of clay soil above a hardpan the main root will stop as though cut off with a knife and send lateral roots

three or four feet long along the surface of the hard-pan when not sown too thick. If sown too heavily on this kind of soil a root mass will form, and the alfalfa the second year will sicken and die. Many alfalfa failures on clay and all kinds of lands have been caused by sowing too much seed.

Preparing the Land for Alfalfa.

(65)



KANSAS ALFALFA SEED, SHOWING WEED SEEDS.

CHAPTER VIII.

PREPARING THE LAND FOR ALFALFA.

When I started to grow alfalfa the information on the habits of the plant was meager, unsatisfactory and contradictory. But upon one point all the authorities agreed—the plant was deep rooted and fed on plant food deeper down in the soil than the plow had ever gone, and it was heralded as a plant that would not only give me paying crops, but it would restore the fertility of the soil, open it up and make it porous and put life into the dead land.

This was the plant that I was looking for. If it would do this I couldn't see the sense of using fertilizers, lime, inoculation and manure. I knew all clay soils as a rule have lime enough, and I believe in manure all the time on all soils, but I have no use for fertilizers. They do help increase the yield if the right elements are used for the various crops, but they put no humus in the soil and only hasten the exhaustion of soil fertility as deep down as the plow goes.

I figured that alfalfa did not need a deep seed bed, but a fine one. If I used manure I would induce a weed crop that could choke out the alfalfa. So I disked the bean field one way and harrowed it the other, and sowed a bushel of oats with 10 pounds of seed to the acre. I got a stand of both, but I let

the oats go too long and lost some alfalfa. Last year I sowed four acres in the corn on July 20 and got a splendid stand. The seed was sown broadcast and not covered, after the corn was laid with a Planet, Jr., cultivator.

Alfalfa never ought to be sown on a field that has been freshly manured. Raise some cultivated crop such as corn or potatoes, and kill off the weeds by cultivation, and sow in the corn or after early potatoes, or sow after the oats or wheat, but don't plow the ground. That means a fresh weed crop. Disk and harrow to kill off the weeds and prepare a fine seed bed and sow the seed without covering. In sandy soil or rich black loam it may do to cover very lightly, but on heavy clay soils it is fatal to cover the seed. If a rain comes a crust will form and the delicate seed leaf cannot get through and the little plant perishes; but if sown without covering on all kinds of soils before a rain the root will go down and the seed leaf forms on top of the ground and does not have to struggle to get to air and sunlight. If sown on top of the ground the young alfalfa will grow from half an inch to an inch a day the first six days, under favorable conditions with a fine seed bed, and not a deep one. There is no root of any grass on the face of the earth that grows so rapidly and seems to revel in the hard soil. Give it a fair start and it will take care of itself, but if you coddle it with manures, fertilizers, limes, etc., it is like any other baby that is given too many sweetmeats and goodies, and it will get sick and die.

Before man appeared upon the earth alfalfa was blown to and fro by the winds. In trying to secure a stand of this valuable legume we are most apt to succeed by following the simple and beautiful methods of nature.

Some of the greatest inventions that benefit the human race have been the result of accident. Men have studied and labored for years working on theories, to devise some useful machine, only to be baffled, and then some trifling event or accident has brought an answer to the problem, but the answer comes as a reward of intelligent labor. It is so with alfalfa. Several years ago Mr. John Holt, the popular singer of Meigs County, Ohio, wanted to sow five acres in millet, on a piece of land at the foot of a hill. He sent for the seed and sowed it without any extra expense in manure, lime, labor, fertilizers and inoculation.

He got a stand, but it did not look like millet. The seedman had made a mistake and sent him alfalfa seed.

It did well, except where a "water sprout" came from under the strata of rock and made a wet strip through the field. Here it soon died out.

Last year in Noble County, Ohio, near Summerfield, Mr. McClintock and his son, a graduate of Purdue University, resolved to try five acres of alfalfa. A rich level field was selected. One corner, about a fourth of an acre, was a rising clay knoll and the soil has washed off of it. The land was heavily

manured except this corner. The supply of manure ran out, and the piece that needed it most got none. The father insisted that this corner be manured before the field was plowed, but the son plowed the field up without putting manure on the corner. It was harrowed and put in good condition and sowed to alfalfa. The season was wet, and the crab grass and foxtail and weeds took possession, thanks to the manure. The field was mowed several times, but the weeds choked out and killed the alfalfa, and in the fall the only place that there was a stand of alfalfa was on the poor clay ground where no manure had been placed.

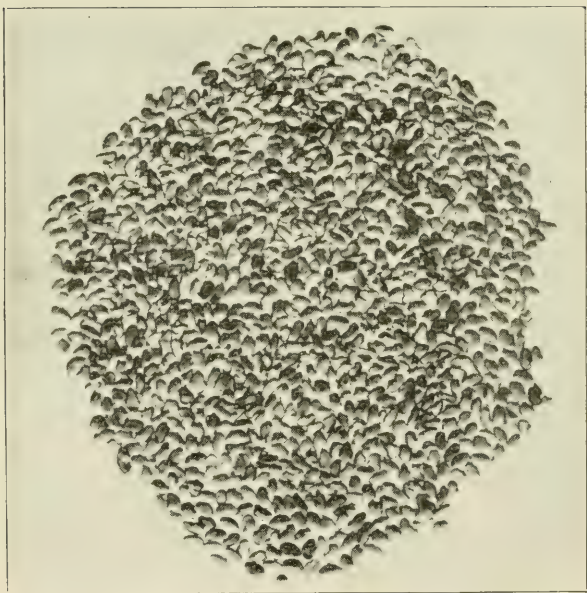
In Harrison County, Ohio, last year, Hon. J. K. McLaughlin tried to get a stand of alfalfa in a seven-acre field on a rolling hillside. The ground was heavily manured, plowed and carefully prepared and sowed, but the grass and weeds started, aided by the manure, and the alfalfa was a failure. There is a vein of coal on the land, and in one end of the field a shaft 60 feet deep had been sunk to test the coal vein. The earth from the shaft was thrown out in the field around the mouth. It was such soil as had been deposited by the glacial drift and floods from the ice—clay, gravel, shale and sand. In sowing the field the seed was blown by the wind onto this earth that had received no preparation for seed of any kind. In the fall the only place where the alfalfa was doing well and had outgrown the weeds was on the ground around the mouth of the shaft.

These accidents ought to teach the important lesson that it is not necessary to overdo the matter in trying to get a stand of alfalfa.

Alfalfa will grow quicker, easier and last longer on poor soil than any grass that grows, except sweet clover, and alfalfa will grow and flourish wherever sweet clover will grow, except on wet ground.

When to Sow Alfalfa in Ohio.

(73.)



KANSAS ALFALFA SEED, FAIRLY CLEAN.

CHAPTER IX.

WHEN TO SOW ALFALFA IN OHIO.

Success in securing a stand of alfalfa depends upon several conditions, such as the soil, the weather, the seed, but I think the most important consideration is the man. It depends more upon him than any other thing.

If a man farms with his feet, and not with his head, he had better never try to grow alfalfa, because he will never succeed.

This is a progressive age, and the farmer who wishes to keep up with the procession and secure a fair return from his land and for his labor must think and adopt up-to-date methods and machinery. He can't do things the way grandfather did and succeed like grandfather did, because father and grandfather farmed a virgin soil, rich in fertility, which has been wasted by careless farming and reckless methods. They as a rule farmed for their own day and generation and took no heed for the future or succeeding generations. The successful farmer of to-day must not only farm for this generation, but the next, and by taking care of his farm during his lifetime he is taking the best care of it for the next generation.

Alfalfa can be sown with safety and success in Ohio from May to August. My own experience has

convinced me that July is the best month in which to sow alfalfa, after oats, wheat or early potatoes or in the corn at the last cultivation. Then the excessive growth of weeds is over. Do not sow during a dry spell. It is better to disk or harrow and work the ground over until it looks like rain. If you sow during a dry spell the seed will not germinate, and you may lose your labor and seed. During the last two years, which have been unusually wet, some have sown as late as September and secured a stand with growth enough to protect the plant during the winter. To carry alfalfa through the frequent changes of our winters it is absolutely necessary that it should be protected by a growth of at least 12 inches, no difference how old the plant is, for if left without a sufficient growth to protect it it will heave out. As our seasons of August and September are usually dry, and the alfalfa will not become rooted deep enough or produce growth sufficient to withstand the winter. I have never failed to get a stand of alfalfa in July by sowing before a rain. We usually have three or four rains in July, and it is always safe to plant during this month, but you run risks of losing your stand by sowing later. But common sense and weather conditions should govern. Alfalfa sown in July will be ready to harvest the succeeding June.

If I had a field that was heavily manured and in corn the year before I would not plow the field in the spring if I wished to sow alfalfa. I would disk it and sow to oats, using not more than a bushel to the acre,

and sow from 6 to 10 pounds of alfalfa seed to the acre. Set the grass seed sprouts for the alfalfa, so that the seed will fall behind the hoes, and not be covered, and between the rows of oats. The alfalfa will start before the oats. The oats should be cut for hay. Set the machine high, and the alfalfa will be clipped off in the oats and makes the finest feed for all kinds of stock.

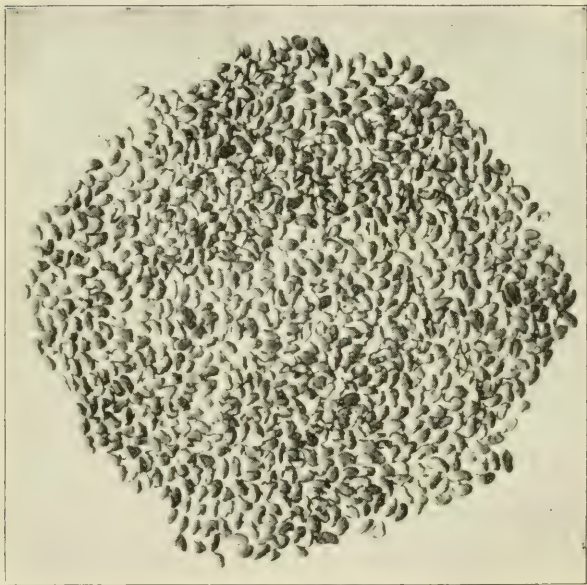
There is no trouble about using oats as a cover crop for alfalfa unless you let the oats mature. Some prefer to use barley. Either would do, but rye and wheat stool out too much and shade the alfalfa. The object in sowing oats or barley is not to raise a crop of either, but to keep down the growth of the weeds and grass. Some call these crops "nurse crops," but, as a rule, if allowed to mature with alfalfa, they are not "nurse crops," but robber crops, and when the grain ripens they do not "nurse," but they rob the soil of both moisture and fertility and kill off the alfalfa, hence the wisdom of cutting before the oats or barley ripen. Yet there are farmers who let both crops mature and secure a stand of alfalfa, but there is always a risk of losing much of your alfalfa, and you want the alfalfa, and not the oats or barley, and when you get a stand of alfalfa you have a product that will last a lifetime and yield abundantly each year.

If it is desired to sow alfalfa in May or June without a cover crop, the ground should be frequently harrowed to kill off the grass and the weeds and give the tender alfalfa a fair field and a good start.

Remember there is danger of sowing alfalfa too early in the spring and having it killed by the frosts. A freeze this year on May 21 killed off much young alfalfa, resulting in a loss of seed and labor.

The Seed and the Amount to Sow.

(79)



OHIO GROWN ALFALFA SEED, CLEAN AND GOOD.

CHAPTER X.

THE SEED AND THE AMOUNT TO SOW.

The question of good, clean alfalfa seed is of prime importance. There is such a demand for alfalfa seed that unscrupulous seed dealers are imposing upon farmers by selling all sorts of trash as the pure alfalfa seed. There are honorable seed dealers who refuse to sell any but good, clean seed. Sow good seed or don't sow at all. Don't buy cheap seed. You may be sure that it is adulterated. It is cheaper to pay the top price for first-class seed than to pay a low price for poor seed. You get more seed and at less cost by buying a first-class article than by buying cheaper stuff.

Next to securing good seed comes the master problem of all in securing a stand of alfalfa—how much to sow to the acre. When the seedmen get a good thing they push it along. For years government bulletins and seedmen's circulars have taught that the only way to get a stand of alfalfa was to sow not less than 30 pounds to the acre. This has been the generally accepted idea, and it has been sustained by the agricultural press. All the writers, professors and institute lecturers have been emphasizing the beauties of sowing 30 pounds to the acre. I have felt from the first that this was a good thing for those who sell

seed, but a poor thing for the farmer who buys seed. I have opposed this with my pen and voice in season and out, and after years of agitation I find that all the large alfalfa growers are pointing out the mistake of overseeding and are recommending from 6 to 12 pounds to the acre.

There have been more failures to secure a permanent, paying stand of alfalfa from overseeding than from any other single cause.

There are 45,560 square feet in an acre. The number of seed in a pound of alfalfa ranges from 170,000 to 210,000 seeds. Say the average is 200,000, in 30 pounds there would be 6,000,000 seeds; sowing 30 pounds to the acre would make 137 seeds to the square foot. If half of them germinated there would be nearly 70 plants to the square foot. You can get more nutritious food from a thin stand than you can from a thick stand. Sixty per cent of the feeding value of the alfalfa is in the leaves.

In a thick stand the plant does not stool. There is a feeble root and a slim, narrow stem, and the leaves do not form on the lower part of the plant, or fall off of the first 12 inches. When the plants stand thin on the ground and stool the leaves form on the stems as low down as the mowing machine will cut; so thick seeding from this standpoint is a serious mistake.

Take your pencil and figure out how many seeds there will be to the square foot with 25, 20, 15 and 10 pounds of seed to the acre. With 10 pounds to

the acre there would be 2,000,000 seeds, or 45 seeds to the square foot. If half of the seeds germinate you would have over 20 plants to the square foot. Four plants to the square foot is an ideal stand. Two plants will produce as much hay as eight. The second year, with two plants to the square foot, each plant will put out 50 shoots and be strong and healthy and go on increasing until the fifth year. Then there will be 200 shoots to the plant, while the alfalfa that has been sown at the rate of 30 pounds to the acre will not stool, and the plants are so crowded that they begin to sicken and die out; besides they are thin, spindley and feeble. The root system is so thick that there is no chance for vigor and growth, and often the whole field will sicken and die. There would be as much sense in sowing 12 bushels of oats or wheat or corn to the acre and expecting a profitable crop as sowing 30 pounds of alfalfa seed to the acre.

Six pounds of good alfalfa is an abundance to sow to the acre. If only two-thirds of the seed germinated this would give you six plants to the square foot.

An Ohio farmer told me last year that he got a good stand of alfalfa by sowing only three pounds to the acre.

I feel encouraged by finding that many experienced alfalfa growers are awakening to the fact that they have been overseeding and are urging the use of less seed.

In its last circular, issued March, 1906, on alfalfa, the Kansas Experiment Station says:

"The general practice has been, and perhaps still is, to sow from 20 to 30 pounds of seed per acre, but many of the oldest and most successful alfalfa growers are now using much less seed. At the 1904 meeting of the Kansas Improved Live Stock Association, Mr. A. E. Sutton, of Russell County, stated, during a discussion on this subject, that he had secured a good stand of alfalfa by sowing only six pounds of seed per acre. Col. J. W. Robinson, of Towanda, Kansas, who grows thousands of acres of alfalfa on his large farms in Butler County, stated that he was then seeding 15 pounds of alfalfa to the acre, but that he intended to reduce this amount to not more than 10 or 12 pounds per acre of good seed. Hon. C. B. Daughters, of Manhattan, Kansas, secured a splendid stand of alfalfa on his Blue Valley farm, near Manhattan, by sowing eight pounds of seed per acre in the spring of 1903; and so throughout the state I have found other farmers who now practice seeding 12 to 15 pounds of alfalfa per acre, while formerly they used from 20 to 30 pounds. At this station a trial of seeding different amounts of alfalfa seed per acre was undertaken in the spring of 1904. Alfalfa was seeded broadcast at different rates, varying from 6 to 36 pounds per acre. The soil was early spring plowing which had been well settled by a sub-surface packer, making a good seed bed. The result of the trial was a fair stand of alfalfa, even on the most

thinly seeded, while where the amount of seed was from 10 to 12 pounds per acre an excellent stand was secured. The heavier seeding gave a little thicker stand, but fewer healthy plants than the thinner seeding. Altogether these trials and the general experience of the farmers prove that it is not necessary to use so large an amount of alfalfa seed per acre as has been the usual practice."

In Wisconsin, Hoard's Dairyman has been one of the most earnest advocates of 30 pounds of alfalfa seed to the acre. In a recent issue of the paper, W. J. Spillman, a successful alfalfa grower, says:

"I am inclined to believe that some of us have made mistakes by sowing too much alfalfa seed. Two years ago, on our farm, we prepared 20 acres of land for this crop, in July after wheat, harrowing it 8 or 10 times, getting it into the finest tilth imaginable. This made an ideal seed bed. We sowed 20 pounds of good alfalfa seed to the acre, and I am confident that the stand was too thick. There is a distinct relation between the amount of seed to use and the state of preparation of the land. I think that on land prepared like that above described 10 pounds of seed would have made an excellent stand. However, if the land is cloddy, or otherwise in bad condition, it may be necessary to use even as much as 35 pounds of seed. Usually it will be cheaper to put the land into an ideal condition of tilth and use a smaller amount of seed."

Many fields of alfalfa have been plowed up because

the stand was not as thick as the hair on a dog's back. They had a good stand and did not know it. They did not give it a chance to stool out and show itself in the spring before it was plowed. I have a neighbor who sowed five acres of alfalfa during the summer of 1905. Last spring it did not look thick enough and he started to plow it up and turned under all but an acre. In four weeks he was at my place and said: "The alfalfa that he did not plow up was growing in the most astonishing manner. I had a stand of alfalfa and did not know it."

Care and Culture of Alfalfa in Ohio.

(87)



ALFALFA SIX YEARS OLD PASTURED TOO CLOSE AND HEAVED
OUT.

CHAPTER XI.

CARE AND CULTURE OF ALFALFA IN OHIO.

The critical period of a stand of alfalfa is the first six weeks. A good seed bed made by thorough tillage to kill off the weeds and good natural or artificial drainage are absolutely necessary. To start with do not sow in the spring until the ground has been thoroughly worked over. Do not sow without a cover crop of either oats or barley. Do not be tempted on account of the oats or barley to sow too early. You may succeed, but there is always danger of losing your alfalfa, while you may save your oats and barley. Having complied with these requirements, the field requires no attention.

If you want alfalfa do not be tempted to let the grain ripen. Some have done it and have succeeded, but there is always danger of injury to the alfalfa from the grain lodging or exhaustion of the moisture and fertility in the soil when the grain ripens. Cut for hay. Cut the grain when in bloom. Do not set the machine low, but set it high, and catch the top of the alfalfa in the hay. Unless the season is very unfavorable there is nothing more to do to the alfalfa. There will be a good growth after July, but do not be tempted to cut it. After this date the weeds can not hurt it, and leave all for a cover to protect the plant

during the winter. After you have cut the grain for hay it may be very dry, and in cases of overseeding the plant will look yellow and sickly. In such cases do not cut the alfalfa, but put a disk on the field, set to cut about two inches. You will kill some of the young alfalfa, but that will strengthen and invigorate the remainder, and you will preserve your alfalfa and get a larger hay crop the next June than if you allowed all to remain.

If you sow in July, and remember that this is the best time to sow, without a cover crop, sow in the corn when you lay it by. Sow after oats or wheat. Disk and make a fine seed bed and kill off the weeds, but do not plow unless compelled to, on account of weeds and grass which prevents disking. If you do you only turn up a fresh lot of weeds to combat and choke the alfalfa. You need a fine seed bed, not a deep one. Sow before a and even loamy soils, many seed will not come through if covered, while the penetrating root can go through the crust on any kind of soil. Many authorities who write wisely, but never planted an alfalfa seed, sagely say cover the seed. I repeat the statement and emphasize it, because it is of vital importance in securing a stand of alfalfa, *DO NOT COVER ALFALFA SEED*, because the root can go down when the top can not come up. Eight years' experience with alfalfa seeding has confirmed the truth and importance of this practice. It is vital to the success of a stand of alfalfa, and I am firmly convinced that many of the failures

in securing a stand of alfalfa have been because the seed has been laid away in its cold grave beyond all hopes of resurrection, and the failure has been charged by the wise dreamers to lack of bacteria and a failure to inoculate the soil.

Every plant has its parasite. The parasite does not precede and produce the plant, but when soil, air and sunshine are favorable the seed germinates and the parasite is a part of the necessary life of the plant and performs some mission necessary to the growth of the plant, about which scientists as yet know absolutely nothing, but they attempt to solve the problem by guessing, and inoculation is one of their last guesses. It is only a guess, and a poor, weak, foolish one at that, but it has been expensive for the farmers.

The Master Chemist of the Universe in the laboratory of eternity worked out the problem before matter came into form, and ordained that the germ of the parasite should be in the germ of the plant, and all the sages, scientists, savants and professors in the world can not reverse the order of creation.

The theory of inoculation, as far as the practical operations of the farm are concerned, is not worth a moment's consideration by any sensible man. It may serve to amuse dreamers, lunatics and babblers.

For the enterprising firm which manufactures nitro-cultures according to the official formula to sell to suckers, or the person who sells inoculated dirt at a dollar a barrel, it is a charming and paying pastime

to be an enthusiastic advocate of the benefits and necessity of inoculation, and if I had the skinflint habit and loved money more than my fellow-man I would cry inoculation with a megaphone from the top of Washington's monument. When I can plant potato bugs and raise potatoes I will sow bacteria to raise alfalfa, but when I can raise alfalfa without inoculation I shall waste no time upon it. Life is too short and money is too scarce.

I have dug up the roots of sweet clover and red clover and found nodules on them, but I have never found an alfalfa root with such evidences of bacteria. My land is too poor to raise nodules, but it produces alfalfa.

To show under what adverse conditions alfalfa seed will sprout and grow, I will give an example. There is a gravel road leading to a cemetery on the south end of my place. It is traveled almost daily. In 1904 I saw a letter from Director Thorne, of the Ohio Experiment Station, to a neighbor, saying that alfalfa seed could not be raised in Ohio. I let an acre of the second crop go to seed to disprove or prove this official utterance. In hauling this alfalfa in, a wagon load was taken over the cemetery road, and the seed dropped on the road in the hard gravel and sprouted and grew, and has been growing there for three years. Some dropped in the grass along the fence, and has been growing there ever since. The accidents confirm the belief that alfalfa seed should never be covered,

and if not covered it would grow under the most adverse circumstances.

Alfalfa sown in July under proper preparations and conditions such as have been described needs no treatment. It may grow 16 inches. Do not cut it under any circumstances. One of the Fernow boys, a cattle breeder in Highland County, Ohio, near Leesburg, sowed seven acres of alfalfa last year in August. It was a wet August and he got a good stand. In October it was 12 inches high, and they told him that he must cut it. He did, and there was not growth enough to protect the plant, and this spring has been so very unfavorable that he has lost it all. Had he not cut it in the fall he would have had a splendid stand of alfalfa.

Some of you will persist in sowing alfalfa in the spring without a cover crop. The grass and weeds will come with the alfalfa, and you will have to cut several times to give the alfalfa a chance. This is one great advantage of sowing in July, when the excessive growth of vegetation has abated.

In Tuscarawas County, Ohio, I saw a farmer who had sowed five acres of alfalfa in April without a cover crop. The season was favorable and it did well. In June it was 16 inches high, and he cut it, because he had seen a piece in a paper that said cut it and leave it as a mulch. He did. The growth was so heavy that the whole field smothered out. Had he raked it up and hauled it off he would have had several loads of splendid feed and would have saved his alfalfa.

In cutting to keep down weeds there is danger of clipping too close, and if you leave the cutting on the ground of smothering the alfalfa. I have a neighbor who planted 17 acres last spring, but the season was wet and weed growth rank. He cut it and raked it into windrows and left it on the field. When it became dry he burned it. He has no alfalfa where he burned the trash which he was too lazy to haul off.

This covers all the treatment that the alfalfa needs the first year. It needs no attention except to harvest it the second year. The third year it will be in its prime and four crops can be cut; and the yield can be increased by disking early in the spring and immediately after each cutting. The disk ought to be set to cut not over two or three inches deep. This will make a mulch that will keep the moisture in the ground and will kill the weeds and grass that may have started. Experience alone can teach you how deep to disk and how often better than I can tell you. Use your own head and the disk.

If weeds and grass start the second year great benefit can be done the alfalfa by going over it with a spike tooth harrow. It will do the alfalfa as much good as harrowing the corn. Don't be afraid to try it. To kill alfalfa you must eat off or cut off the crown of the plant. It will thrive under all sorts of treatment as long as you leave the crown intact.

After the third year you can set the disk so as to cut four inches. It will split the crown, increase the number of shoots and the yield.

The Wagon is One of the Most Important Implements on the Farm

But often in buying a wagon very little thought is given the matter. An enormous amount of money is wasted yearly in labor lost in loading and unloading, in cutting up fields and roads and in horse feed. All this waste because so many keep on using the old, heavy, high wheeled wagons with narrow tires for work for which they should never be used. The style wagon known as the low down or handy wagon providing it is well constructed and durable, is as necessary to every farm as fresh water. The low wagon with broad tired wheels should always be used for hauling hay, fodder, manure or stock, for stacking grain or driving over soft fields. If the ALL STEEL WAGON shown in the cuts is used one need not be particular about keeping it under cover. These steel wagons which are manufactured at Wapakoneta, Ohio, are considered the best farm wagons on the market. They are built so as to keep the bed as near the ground as possible, are made of steel but are very light, much stronger than the ordinary wagon, have light draft and are not expensive. It is claimed that they will last a life time, and the expense of keeping them practically amounts to nothing.

Wagons that are Being Used Extensively
and Which are Highly Recommended for Farm Use

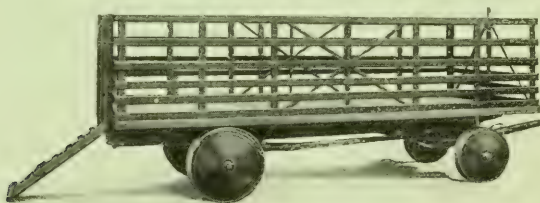


A Bruner All Steel Wagon

—With—

31 and 37" Wheels, 4 by 3-8" Tires

Manufactured at Wapakoneta, Ohio



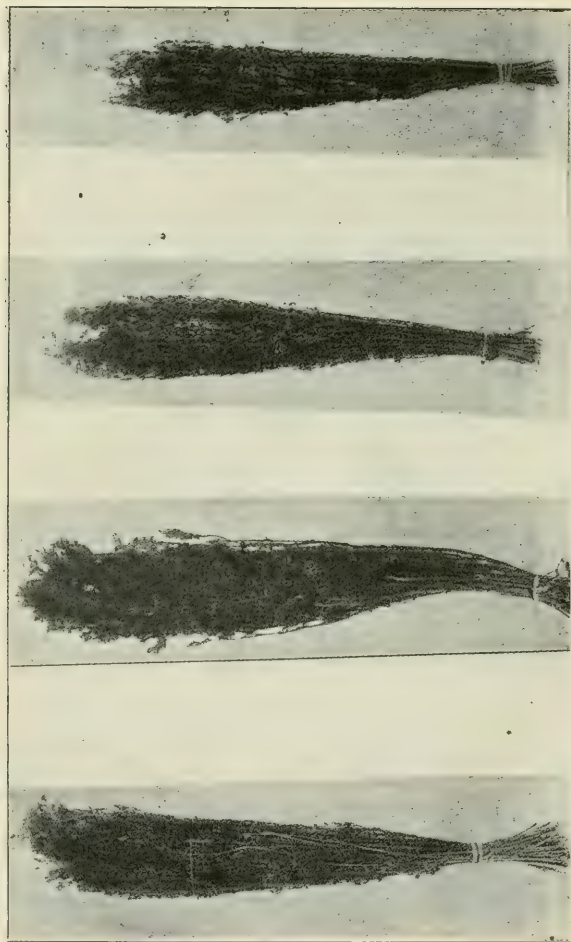
A Bruner All Steel Wagon

—With—

25 and 31" Wheels and Stock Rack

Making Alfalfa Hay in Ohio.

(95)



FOUR CUTTINGS OF ALFALFA, 1906, AT ALFALFA PLACE, MEASURING 12 FEET SIX INCHES.

CHAPTER XII.

MAKING ALFALFA HAY IN OHIO.

In June, 1902, I cut my first alfalfa. I was told to cut it when one-tenth was in bloom. I followed these instructions for two years, and from observation I found that while this rule may be followed in the West it was not best in Ohio. When the first crop is ready to cut in June it grows on an average to a height of 48 inches, and if you wait for it to bloom it becomes rank and woody and is almost sure to lodge and become a tangled mass; and as the leaves are the most valuable portion, many will be lost by the alfalfa lodging and becoming rusty, and the leaves fall off and the hay is not so valuable. I found if you delay cutting the first crop until one-tenth was in bloom the hay was not relished as well by the cattle and horses, and it injured and delayed succeeding crops so that only three crops could be secured in a year. Bulletins from Western state experiment stations confirm this fact.

When red clover has been grown without any guide in harvesting alfalfa one is apt to follow the methods used in harvesting that crop, and by waiting too long for the blooms to come, often lose their alfalfa in the second year.

The Chemical Department of the Kansas Experiment station reports the following:

"The great value of alfalfa is in the large amount of protein it contains, that material in feed that is absolutely necessary for the formation of blood, bone, meat and milk. The higher the protein in alfalfa the more valuable the hay. The effect of cutting the alfalfa at different stages is as follows:

	Protein per cent.
One-tenth in bloom.....	18.5
One-half in bloom.....	17.2
In full bloom.....	14.4

The Colorado Experiment Station found the result of cutting alfalfa as follows:

	Protein per cent.
Coming in bloom.....	18.5
Half in bloom.....	14.6
In full bloom.....	12.9

The Utah Experiment Station for five years cut alfalfa at different stages of maturity and fed the crop in producing beef. The average production per year per acre was as follows:

	Hay, tons.	Beef, pounds.
In first bloom.....	5.35	706
In full bloom.....	4.90	562
Half blooms fallen.....	4.55	490

These tests show that the alfalfa cut just preceding the bloom, or upon the first appearance, the better will be the hay and the greater the feeding value.

I have found that the best time to cut the first crop is before the blooms appear. At this stage of the growth the plant puts up spikes for the blossom and the whole appearance of the field undergoes a change. Going into the field at this time and spreading out the stems on the crown a number of tender shoots may be seen starting up. If the alfalfa is cut at this stage these plants come on vigorously, but if the alfalfa is allowed to remain until the blossoms appear in full the tender shoots begin to halt and cease to grow, because the energy and capacity of the plant is taxed to produce flower and seed.

The mission of all forms of life is to reproduce themselves, and wonderful as alfalfa is it can not grow seed and produce a hay crop at the same time.

Let me impress upon you the importance of cutting a new stand of alfalfa for hay not to let it get into blossom. Cut it when the spikes appear and the shoots start on the crown.

In making alfalfa hay the first two years I had all sorts of trouble. I was told that alfalfa hay was harder to cure and worse to handle than red clover. I was officially instructed that the only safe way to save a crop of alfalfa was to have canvass caps made to cover the cocks and tuck the corners under the edges. But with 50 cocks to the acre and 12 acres it would take as much canvas as is used in a three-

ringed circus, and I did not have the money to buy the canvas. If a man has a small patch of alfalfa, plenty of time and money to waste, he can amuse himself with this useless folly in making alfalfa hay.

At first I left the alfalfa hay too long without raking up, as we do with red clover, and the leaves dried and scattered, and when I cocked it up the loss of their leaves or their being too dry delayed the evaporation and prolonged fermentation of the stem, or the progress of sweating, as it is called. If it rained the cocks had to be opened, and then cocked up again and left standing sometimes for a week, and where they stood the growing alfalfa was smothered, and the next crop was delayed and injured. But I stuck to my job and studied the plant. I found that the leaves constituted over half of the feeding value, a ton of alfalfa leaves being equal to 2,800 pounds of bran, and the essential thing was to save the leaves. The second year I began curing the hay with this object in view, and then learned that the fresher the leaves were kept the quicker the stems were dried out.

This proved the key to the problem, as the leaves are the lungs of the plant, and as long as kept fresh they perform their function of breathing. Then I learned that the best time to make alfalfa hay was not when the sun shone, as the old proverb says, but when the wind blew; nothing can do more injury to freshly cut alfalfa than to let it lie spread out under the burning sun. This will do it more injury than a hard rain. Alfalfa will stand more rain if raked into

windrows and suffer less injury than any kind of hay. By cocking the alfalfa it did not cure and in a season knocked out one cutting.

There has been difficulty and always will be trouble in curing alfalfa hay on first and second bottoms along streams, where the moisture hangs in the valleys and rises from the streams and ground like steam and prevents the alfalfa from drying out quickly and properly; whereas on the hills and high rolling ground the wind can cure the hay while it is being cocked in the bottom fields. The difficulty in curing alfalfa hay in bottom fields in Ohio has given birth and currency to the exaggerated stories about the great troubles and almost impossible task of making alfalfa hay, and the fertilizer men have not been slow to repeat these doleful statements at every crossroads grocery.

In Ohio you can cut four crops of alfalfa with safety, and the average yield will be from five to eight tons per acre each year; but when alfalfa is ready to cut it must be cut, and it is cut by every farmer who grows it when he has learned its value. Other crops can wait, but alfalfa is a jealous lass and requires the most constant attention at the right time if you want her to be true to you.

In 1905 I cut four crops of alfalfa in June, July, August and September, totaling 12 feet 3 inches of grass. In 1906 I cut four crops in the four months named, cutting on June 2, July 5, August 10 and September 16. 12 feet 6 inches of grass. The yield ran from 10 tons on one part of the field to 5 tons

on the rest. This was the fifth year since planting and the sixth season.

When the alfalfa is ready to cut the machine goes onto the field after the dew is off in the morning and is run until noon, cutting down as much as can be raked up and hauled off in the afternoon. If the sun is shining we begin raking up after dinner in windrows, raking that cut first, and when through raking the hay is loaded and hauled to the barn. It is not dumped in bunches in the mow, but is scattered around. The loading and mowing gives it an airing that is ample to keep it in prime condition.

If it rains then comes another problem. The last two rainy seasons have been hard on the hay making. But if it looks like rain the hay is raked into windrows. It does better in the windrows than spread out, and when the sun comes out the leaves do not dry and scatter, but seem to toughen. If it clears the next day, when the windrow dries off it is turned over, and in the afternoon it is ready to haul in. It is left in the windrows as long as it rains. If you cock it when green it will begin to sweat and heat when packed together. This it never does in the windrow.

I put all my alfalfa hay under shelter, an important lesson that Ohio farmers must learn, to save loss and make farming pay a fair return for labor, time and capital invested, and that is to provide shelter for all crops and grain, and not leave them out of doors subject to injury and loss because of the weather conditions.

Alfalfa may be stacked out in Ohio and it will keep perfectly fresh and sweet if the stack is covered with grass or hay to shed water. Like other hay, it needs a man to do the stacking who knows his business, and there are not many left in these days of rapid progress and improved machinery who do. Stacking hay successfully requires as much experience and brains as any work on the farm, and this accomplishment seems to be becoming one of the lost arts.

There will always be more trouble in curing the first crop of alfalfa each year than any other crop. Sometimes before a hay crop is all in some of the hay may become wet, or a load may be caught on the way to the barn. By putting a layer of straw over the hay and putting the wet on top and scattering it around it will dry out in the mow and will not injure the other hay. I have put three cuttings on top of each other without any injury. I have never lost any alfalfa by overheating in the mow, but I lost it one season in the stack. It was not the fault of the alfalfa, but of the shoemaker that did the stacking. Water does not destroy alfalfa hay. A long rain after cutting will shatter the leaves and injure the feeding value, but after this exposure all the stock on the farm will go to it and eat it in preference to timothy.

The most trouble (the leaves being the most valuable part of the plant it is dangerous to use a tedder in making alfalfa hay) with alfalfa hay comes from the first cutting. It is so rank and rich that it takes longer to cure than the other crops. The first, or

June, cutting ought never to be stacked for the reason given, but should be placed in the mow. The other cuttings may be stacked with safety.

Alfalfa is such a wonderful plant, it has so many peculiarities, and it presents different features under the variations of soil, climate and conditions that we have much to learn about it. I have never talked to a man who has raised alfalfa that he did not tell of some feature or peculiarity that he had discovered. This work is not intended as a book of revelations. The writer is trying to tell all that he has learned from experience, and give the reader the benefit of his knowledge gained from his mistakes and successes. He expects to learn a great deal more about alfalfa if he lives a few years longer, but if he waited until he learned it all he would never write a book on alfalfa.

All who are interested in this remarkable forage plant should aid in its introduction and growth by careful study, and be willing to give their fellow-farmers the benefit of their experience. For this reason don't be afraid to use your brains and to try to solve alfalfa problems in Ohio that are staggering many and discouraging others,

The Enemies of Alfalfa in Ohio.

(105)



1.

2.

1. PLANTAIN, THE WORST ENEMY OF ALFALFA IN OHIO.
2. ALFALFA ELEVEN MONTHS OLD, PLANTED IN THE CORN
JULY 20, 1906.

CHAPTER XIII.

THE ENEMIES OF ALFALFA IN OHIO.

The worst enemy of alfalfa in Ohio is man.

Some men can't grow it.

Some men won't grow it.

Some men don't want to grow it.

There are many wise and learned men who say it won't grow in Ohio.

There are selfish men connected with feed and fertilizer firms who don't want alfalfa to grow in Ohio, because it will make the farmer independent of their business. These, with the wise men who are often hired, have worked overtime telling the difficulties in obtaining a stand of alfalfa and raising insurmountable obstacles, like mountains, in the way of growing alfalfa and discouraging many from making the attempt.

Outside of man there are few enemies that jeopardize a stand of alfalfa.

I have heard of two instances where grasshoppers last year destroyed fields of alfalfa, one in Clarke and the other in Madison County. Upon inquiry I found the young alfalfa had been clipped in August, just as the grasshoppers were coming on, and they had eaten the tender shoots until the plant died. There is always danger of clipping young alfalfa too

close, and if grasshoppers are numerous the young plant ought not to be clipped at all, because if left growing they can not injure it.

So far there are no insects that are a menace to the plant.

Great stress has been laid upon the Dodder plant, but it is not a menace and cuts little figure.

In the alfalfa seed imported from Europe Dodder seed has been used as an adulterant, and in that way has been introduced in our alfalfa fields, but it only lasts a year, and the frequent cutting of alfalfa kills the Dodder. This weed is a slender vine that grows up and feeds on the alfalfa. The root dying, it must go to seed to reproduce itself. If cut before it seeds, as it must be in harvesting alfalfa, it disappears. I had Dodder in my first alfalfa, but in cutting the alfalfa the second year the Dodder disappeared and has never made its appearance again.

The worst enemies of young alfalfa when planted in the spring are such grasses as foxtail and crab-grass, and if these get started with the alfalfa they will usually crowd out and kill the alfalfa. On account of these grasses it is best not to sow in the spring, but to sow in July.

The two worst weeds in old alfalfa fields are sorrel and plantain. Buckhorn is often found in alfalfa seed, and if it once gets a hold and is permitted to grow without being checked it will kill the alfalfa and take the field. The only way to keep it down, as well as

sorrel, is to begin disking the second year after each cutting.

There seems to be an affinity between alfalfa and blue grass, and if the latter is not checked in the course of three or four years it will take possession. It can be kept down and out by disking after the second year, which cuts up the young blue grass and serves as a cultivation for the alfalfa.

Mr. Jno. M. Jaminson, of Ross County, Ohio, who has had great success with alfalfa, says:

"Where blue grass is indigenous alfalfa will not always grow if the land is put in proper condition, for the former will thrive on land entirely too wet for the latter. It may be desirable in some cases to have the two together for pasture, but I can hardly believe the combination as valuable as the alfalfa alone. On rough lands, too rough for making hay over, if alfalfa can be made to start it will answer an excellent purpose in connection with blue grass as long as it will hold, but in time the blue grass will drive it out, along with the help of stock feeding on it, for I believe they prefer the alfalfa to the blue grass. I have found when I tried to pasture my alfalfa fields that the blue grass along the fences and in waste places is always neglected. No doubt this will be the fact when the two are grown together. Another point which must not be forgotten by those that contemplate growing them together—blue grass is a surface feeder and in a sense robber, for when pastured off close it gives no more back to the land than it takes from it; hence

to live it must depend on leguminous plants to supply the nitrogen needed. White clover is its main helper in this direction, coming in at intervals as demanded or directed by nature.

"Alfalfa makes strong deposits of nitrogen in the soil, making it a most desirable feeding ground for blue grass. The alfalfa on account of its deep rooting thrives and grows in dry, hot deather, when the blue grass is dormant. On the other hand, blue grass during the late fall, winter and early spring, when cold weather and continued frosts prevent any growth of the alfalfa, grows every warm, sunshiny day, spreading itself out and increasing the strength of its sod.

"This spring, the last half of March, the alfalfa made a wonderful growth, outstripping everything else, some of it reaching a foot in height before the sharp freeze downed it all.

"Since that, up to May the first, the continued freezes and frosts have kept it weak. Now the alfalfa fields have nearly lost their brown, dead color. During this month of its weakness the blue grass has been making an excellent growth. In my six-year-old field some of the alfalfa was frozen out the second winter after seeding. In these spots blue grass has taken hold and is spreading itself. So it is only a question of time until the field will have to be plowed and resown.

"Along the fences blue grass grows rank and seeds itself, gradually widening the strip that it occupies. In this field in some places the blue grass is

making itself plain more than a rod from the fence. I have another field of 10 acres, sown in August, 1906, that before that had been in a three-year rotation crop, of corn, wheat or rye and clover for 15 years, only such blue grass growing as could get a hold between times, probably none going to seed. During the years that the field was in rotation stable manure was used frequently, much of it hauled from town. And doubtless in this hauling much of the blue grass seed was secured. Many blue grass tufts are starting in this field and many single plants are also starting. Doubtless the latter would not have started this spring had the alfalfa escaped the check from freezing. As it is, they will get a strong start before the alfalfa gets large enough to shade it and hold it in check. At any rate, the blue grass will prove to be a weed in the alfalfa field, cutting short the life of the alfalfa to a considerable extent.

"When blue grass sod is to be plowed for alfalfa sowing it will be advisable to cultivate the land in other crops for a year or two to get rid of the blue grass seed that may be in the soil. In this plowing it will be advisable to get as close to the fence as possible, for the strip of blue grass along the fence will constantly widen and push out the alfalfa."

In Ohio young alfalfa, as in other Eastern states, has been attacked by leaf blight. When 10 or 12 inches high the leaves turn yellow and fall off. No one as yet has been able to tell the cause of this condition. It has been noticed and studied for years, but

no explanation has been offered. When this blight appears, clipping the tops, but not cutting close, seems to check the disease and invigorate the plant. This blight usually appears in the young plant, during the first year of its growth. It is like the measles with a baby; it is one of the things the plant has to have. But in the spring of 1904 I was short of feed and sent the mower into one end of the field in May, when the alfalfa was about 20 inches high. The alfalfa was three years old. A narrow strip was cut, and the alfalfa hauled to the milk cows. This saved a trip to the mill to buy bran, at \$20 per ton. When the alfalfa came up it all turned yellow, while the alfalfa beside it that had not been cut was never affected. When the field was cut for hay the blighted part was cut and it came back fresh and strong, and has not been affected since.

Pasturing Alfalfa in Ohio.

(113)



TUNIS SHEEP ON ALFALFA PASTURE, ON FARM OF W. I. WOOD,
PICKAWAY CO., O.

CHAPTER XIV.

PASTURING ALFALFA IN OHIO.

No more nourishing and nutritious feed ever grew out of the ground for all kinds of stock than alfalfa, and for this reason it is liable to abuse.

No plant that ever grew on mother earth can produce more meat, bone and muscle to the acre, at less cost in time, money and labor, than alfalfa.

All kinds of poultry and stock will feed eagerly, ravenously, but too often with injury to themselves, and always with harm to the alfalfa. I have learned this lesson by sad and expensive experience, both in the loss of valuable Jersey cows, and finally in the loss of the alfalfa. If some wise scientific farmer had told me what I am telling the reader in this chapter, it would have saved me hundreds of dollars.

The information I impart in this chapter is of such importance to all who grow alfalfa that I want to burn it in so you won't forget it, and won't grow reckless and careless and suffer needless loss. If I can do this and give to my fellow farmers the benefits of my experience, every one who reads this book and profits by my mistakes, will be compensated a hundred fold, and I shall not have written in vain.

Alfalfa in Ohio can never be used as a permanent pasture and survive. Our extremes of climate are

such as to make it dangerous to the plant to allow any kind of stock upon it. It will stand any kind of treatment from all kinds of stock during the growing season, after the first year, but if used as permanent pasture, for hogs, cattle, horses, or sheep, they will trample down the crown of the alfalfa, and it will begin to die out. If pastured late in the fall, say in October, it is almost sure to heave during the freezing and thawing of winter, and die out. It never ought to be cut after September. It never ought to be pastured at all in Ohio, but the temptation will be too strong, and many will do it, but if you want to keep your alfalfa, stock should not be permitted on it after September 1. The plant will need all of its growth after this date for protection from our severe weather and sudden changes in winter. No kind of stock or poultry ought to be turned on an alfalfa field the first year.

Ducks and chickens will destroy a young alfalfa field if permitted to run on it, during the fall and winter of the first year, after this they can do no harm.

Growing alfalfa does not injure any kind of stock except cattle and sheep. Both of these are liable to bloat unless the greatest care is used. I do not wish to give any instructions about how to pasture alfalfa, because I know that it ought not to be pastured, but some are too lazy to harvest this valuable crop, and want the stock to do it for them. Hogs and horses can be turned in any time during the growing season

after the first year from the time the grass starts until September 1, and will grow and flourish as on no other grass. You can start cattle and sheep in the spring with the grass and there is no danger of bloat, because they keep the growth down and become used to it before it becomes rank. Turning cattle on alfalfa early in the spring does it good, and keeps the weeds down while the constant clipping of the alfalfa strengthens and invigorates the plant. I have pastured from March until May 15 and cut 48 inches of alfalfa on June 15. It took just 30 days for the crop to come after the cattle had been taken off.

I lost some valuable Jersey by bloating on alfalfa, before I learned how to treat them, and a practical farmer gave me a sure and speedy remedy. I punched a hole in the pauch but they are all dead. They all went to the fertilizer factory for nothing, and I bought them back at \$25 with some dirt thrown in a "filler" and for good measure.

The farm papers and the scientific will tell you that the only remedy for hoven or bloat, is to secure a Torcar and Cannula and puncture the stomach or pouch and let the gas escape. This is brutal, cruel and unnecessary, and if the animal does not die its strength and usefulness is always impaired from the operation. The ordinary man is not well enough informed upon the cow's anatomy to successfully perform this needless operation. All ruminants have compound stomachs and are liable to bloat.

The green food when taken into the stomach com-

ing in contact with animal heat, germinates carbonic acid gas, so suddenly and rapidly that the organs can not perform their natural functions and permit the gas to escape through the ordinary channels. As a result one organ after another becomes paralyzed until death ensues. When an animal is bloated from eating any kind of clover or grass, an application of a spoonful of old fashioned pine tar, to the base of the tongue, so it can be swallowed quickly will bring instant relief. The pine tar breaks up the chemical process by which the gas is formed and acts on the organs affected in the most rapid manner. Keep a box of old fashioned pine tar handy and it will save money and valuable animals.

Another objection to pasturing alfalfa, and it is a serious and important one, is the pollution of the field with weed seed from the dropping of the stock.

Alfalfa is too valuable to pasture in Ohio, and for the present it must be regarded only as a hay crop and as such it will prove the most valuable asset upon the farm.

It is a feedmill, a wind pump and fertilizer factory all combined and in all the history of agriculture there has never been known any plant that combines so many valuable qualities. The best way to handle green alfalfa is by soiling. Cut it and haul it to the stock as you need it. You spend two hours and \$20 driving to the mill to get a ton of bran. You can get a ton of alfalfa in one hour for \$1 that will produce more butter, milk and meat than any ton of bran that was

ever ground. Alfalfa when wilted will not bloat like the green alfalfa eaten in the field, and everything on the farm will eat it but the family.

In pasturing alfalfa much is trampled down and wasted. In soiling everything, leaves and stems are eaten and nothing left to waste. As with clover and timothy you ought to get twice as much by soiling as you can by pasturing. One acre of alfalfa used by soiling will support with splendid results five cows, as well as five acres used for pasture.

The Kansas Experiment Station reports that ten milch cows were maintained for the summer on two acres of alfalfa without any grain, cut and fed fresh to them three times a day.

At farmers' institutes and other gatherings of farmers I find a great deal of wild misinformation in circulation about dangers of alfalfa. "It is poisonous." "It is dangerous," "It is not fit to grow on the farm." "It bloats sheep." "It kills cattle." "It hurts hogs." "It injures horses' kidneys," and other wild and lurid talks calculated to create doubt. When I come to run these stories down I found that they were not born in ignorance, but were the spawn of malice and self interest. The fertilizer agents and feed men are the busy bees, circulating these misrepresentations and well may they be anxious to prevent the growth of alfalfa for with its advent as a general farm crop in Ohio, the Buckeye farmer will save thousands of dollars and become independent of these interests.

**The Value of Alfalfa as Compared with
Grain and Other Grasses.**

(121)

CHAPTER XV.

THE VALUE OF ALFALFA AS COMPARED WITH GRAIN AND OTHER GRASSES.

The superior value of alfalfa as feed for all kinds of stock, whether green or cured, lies in the large amount of protein the plant contains. Nature has endowed this plant with a capacity for extracting nitrogen from the deep soil and the air, that no other known plant possesses. This, combined with the potash and phosphoric acid, which is secured deep down in the soil below the plow line, penetrating deeper than any grain or forage plant known to man, makes a combination that renders the plant not only inviting and appetizing to stock, but the combination of chemicals in alfalfa act as a tonic that braces up the system, and hastens the growth and development of blood and muscle, in all kinds of young stock, and when it is desired to push the stock for market, when fed with grain it produces blood and fat, in a shorter time and at less cost than any other forage plant.

The following table from a bulletin issued by the New York Experiment Station, gives the comparative feeding values of several staple feeding stuffs and shows how alfalfa leads all the others:

	Yield per acre of total crop.	Dry matter per acre.	Total digestible matter per acre.	Digestible pro- tein.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Alfalfa	34,100	8,000	5,280	875
Corn, entire plant.....	28,000	5,800	3,800	300
Red clover	18,000	5,220	3,200	491
Oats and peas.....	13,000	3,120	2,521	350
Timothy	10,000	3,500	2,000	228
Rutabagas	31,700	3,400	3,000	279
Mangels	25,000	3,500	2,750	232
Sugar beets	17,800	2,500	1,800	213

The following table prepared by the Texas Experiment Station gives an analysis of various feeds showing the digestible material and chemical elements:

	Dry Matter in 100 Lbs.	Digestible nutrients in 100 pounds.			Fertilizer constituents in 1000 pounds.		
		Protein.	Carbo-hydrates.	Ether Extract.	Nitrogen.	Phosphoric acid.	Potash.
<i>Hays:</i>							
Alfalfa	91.6	11.0	39.6	1.2	21.9	5.1	16.8
Cowpea	89.3	10.8	38.6	1.1	19.5	5.2	14.7
Oat hay	91.1	4.3	46.4	1.5	.....	.....	.....
Fodder corn	57.8	2.5	34.6	1.2	17.6	5.4	8.9
Sorghum	82.04	2.4	40.6	1.2	.....	.....	.....
Cotton seed hulls.	88.9	.3	33.1	1.7	6.9	2.5	10.2
<i>Green Feeds:</i>							
Alfalfa	28.2	3.9	12.7	.5	7.2	1.3	5.6
Cowpea	16.4	1.8	8.7	.2	2.7	1.0	3.1
Oat fodder	37.8	1.6	18.9	1.0	4.9	1.3	3.8
Corn silage	20.9	.9	11.3	.7	2.8	1.1	3.7
Sorghum	82.4	2.4	4.1	1.2	.....	.....	.....
Rape	14.0	1.5	8.1	.2	4.5	1.5	3.6
<i>Grains:</i>							
Wheat bran	88.1	12.2	39.2	2.7	26.7	28.9	16.1
Cotton seed meal.	91.8	37.2	16.9	12.2	67.9	28.8	8.7
Corn	89.1	7.9	66.7	4.3	18.2	7.0	4.0
Cowpea	85.2	18.3	54.2	1.1	33.3	.....	.....
Cotton seed	89.7	12.5	39.0	17.3	31.3	12.7	11.7

From the information contained in this table, F. D. Coburn, secretary of the Kansas Board of Agriculture, says, "That five tons of alfalfa hay contains 1,100 pounds of protein equal to this food element in

	Pounds.
Cotton seed meal.....	2,956
Linseed meal	3,754
Wheat bran	9,016
Cowpea hay	10,185
Red clover hay.....	16,176
Timothy hay	39,285

This shows a ton of alfalfa in feeding value is about equal to two tons of clover hay, or four tons of timothy—an acre of alfalfa will produce more nutriment than five acres of clover or ten acres of timothy. I am convinced that an acre of alfalfa in Ohio will produce as much feed as ten acres of any grass that grows in the state. Every farmer that plants an acre of alfalfa adds ten acres to his farm and he saves in labor and expense, for the labor and expense of growing and harvesting a ton of alfalfa is no greater than in making clover hay and timothy, and in the alfalfa at the same cost you are getting three times as much feed and three times the value, and on less land you can support twice the amount of stock without danger of your crop failing. For after a stand of Alfalfa is secured, hot dry weather never destroys the yield. The crop is lighter in a long dry spell, but there is never a total failure as of other grasses and grains in drouth.

Alfalfa settles all trouble about planting sorghum, Kafir-corn and other forage crops to carry the stock through August when the pastures dry up.

An analysis of Alfalfa and other feeds, one place in one state can not always determine the value of the

same crop in another state. The different soil, climate and rainfall must make a wide difference in the chemical composition of all plants.

I do not believe we can raise as much Alfalfa per acre in Ohio as they do in Kansas, but the soil is stronger and the Ohio grown Alfalfa is richer in food elements.

Some experiment stations in the West have made investigations to determine the feeding value of the various cuttings during the season, and report that the first crop of alfalfa is richer and better than other crops. This is known to be so with red clover in Ohio and I supposed that it would hold good with alfalfa, but after feeding it to horses, hogs and milch cows for four years, I find that the last or fourth cutting of alfalfa in September is the most nutritious, and if samples of the four cuttings are laid before the stock for them to choose they always select the last cutting first and eat it before touching others. I guess they know which is the best.

All who have had any experience in feeding any kind of stock for market have unanimously reported that greater gains in less time with less grain and less cost can be made with alfalfa than with any other forage that has ever been fed. All kinds of young stock make better growth of bone, muscle frame, hair and blood on alfalfa, and can be finished off with grain in a shorter time and at less expense than grain alone, or with grain and any other rough feed. These are

facts so well established that no one has been found to dispute them.

One acre of alfalfa each season will produce as much nutriment as two acres of corn, at one fourth the cost. It can be easily seen that man, who raised and feeds alfalfa to his stock had a wide margin of gain and profit over the man who does not raise or feed alfalfa.

Mr. H. M. Cattrell, who spent twenty one years on the Kansas Agriculture farm and urged and aided the introduction and extended growth of alfalfa on all Kansas farms, gives the following valuable information on the feeding value of alfalfa :

"On the Agricultural College farm, during the winter of 1901-2, we were obliged to feed our young stock alfalfa hay only, as no other roughage could be obtained at a reasonable price. Our two and three year-old pure bred heifers were fed alfalfa hay only, without any grain whatever, from September 2, 1901, to April 4, 1902—214 days—and made an average daily gain of one and two-tenths pounds per head. The largest gains and the best conditions of the heifers were secured when twenty-three pounds of hay per head were fed daily. This shows that alfalfa hay furnished a maintenance ration through the winter months, and, in addition a gain of 104 pounds for each ton fed. These cattle ran loose in a lot fenced with wire, and had a broad shed opening on the south for shelter. The heifers at the close of feeding were in

such a condition of flesh and hair that visiting Eastern feeders were sure that oil-meal had been fed.

"At this station pigs were pastured throughout the summer on alfalfa with a light feeding of corn. After deducting the probable gain from the corn the gain per acre from the alfalfa pasture was 776 pounds of pork. One lot of fattening hogs were fed all the grain they would eat; another lot all the grain and dry alfalfa hay they would eat. The lot having the hay made a gain of 868 pounds of pork per ton of alfalfa hay. Alfalfa should form part of the daily ration of every growing pig and of all stock hogs. Hundreds of brood sows were carried through the past winter on alfalfa hay, without grain, and had large litters. It pays, though, to feed some grain.

"With scrub cows fed alfalfa hay and Kafir-corn grain, at ordinary prices for feed, butter fat was produced at a cost of feed for seven cents per pound. On the College farm, young cattle are wintered on alfalfa hay and corn fodder, Kafir-corn fodder, and sorghum fodder, and made through the winter a good growth without grain.

"A stockman in Rice County, Kansas, made a gain of five pounds per day per head on steers for forty-seven days with alfalfa hay and corn. In ordinary feeding, 1,000 pounds of grain are required to put on 100 pounds of gain on a fattening steer. With alfalfa hay and corn-meal, at this station fattening steers

made 100 pounds of gain for each 718 pounds of grain.

"Alfalfa makes good pasturage for horses. Horsemen report a gain of six pounds a day per head on horses pastured on alfalfa and given a light ration of corn or Kafir-corn. Pure-bred Percheron mares were recently inspected by the writer that had been fed alfalfa hay in the winter and given alfalfa pasture in the summer for twelve years. They were in almost show condition, and had been and were regular breeders.

"Alfalfa hay is one of the best feeds for sheep that is grown, and both green and dried alfalfa are valuable feeds for poultry. Alfalfa leaves are especially valuable to color the yolk of the egg in winter.

"On account of its effect on the skin and hair, alfalfa is one of the best feeds for cattle being fitted for the show ring."

In Kansas it is estimated that it costs \$2 an acre to handle an alfalfa crop. I do not believe that the average cost would be more than this in Ohio. Counting rent, taxes, seed and labor, and interest and investment my expense for harvesting alfalfa has not exceeded this in the last six years.

The average cost for an acre of wheat in Ohio for the past three years is \$13.00, the average amount realized per acre on wheat and straw is \$14.50, leaving a profit of \$1.50 an acre. The average yield of alfalfa in Ohio is five tons an acre, at the low and reasonable price of \$10.00 a ton, this gives a gross return of \$50

an acre and a net profit of \$40. I have an acre of ground that yielded last year ten tons of alfalfa and netted \$120. This is better than raising wheat at a net profit of \$1.50 an acre.

When you get a stand of alfalfa, if properly cared for, it will last a life time, and you do not have to plow and seed every year, as you do with wheat and corn. Mr. Reader, these are stupendous facts, but you might as well look them in the face and get into the alfalfa bandwagon.

If the sheep, hog and cattle men of Ohio hope to face the competition of the cheap lands of the West, they must raise alfalfa or they will find themselves unable to enter the market in open competition.

The time has come when the farmer who raises alfalfa and feeds it to stock, can't lose money.

The farmer who raises stock and does not raise alfalfa can't compete with the alfalfa man and make any money. To keep up with the procession, Mr. Farmer, you have either got to raise alfalfa or stop farming. Some of you can't believe this now but facts are stubborn things and the rapid developments of the near future will burn the truth into your consciousness until you awake to a realization of its importance and act accordingly.

Ohio Grown Alfalfa Seed.

(133)

CHAPTER XVI.

OHIO GROWN ALFALFA SEED.

The final solution of the successful and profitable growth of alfalfa in Ohio hinges upon the production of Ohio grown alfalfa seed.

Happily this problem has been solved, and alfalfa seed of an excellent quality and abundant yield has been produced in counties in the northern and southern sections of the state.

Alfalfa seed can be produced wherever alfalfa will grow, and with Ohio grown seed a stand of alfalfa is assured. In many localities in the West, where attempts were made to introduce alfalfa, there were many failures where the seed was imported from Europe when used, but adjoining fields sowed with seed grown in Western states gave an excellent stand where the imported seed failed to germinate.

Unfortunately it has been officially announced by those paid to know that alfalfa seed could not be grown in Ohio. This misinformation has been vigorously and eagerly repeated by seedmen. Since I began writing this book the seedman in a well-known firm has told me that alfalfa seed could not be grown in Ohio, because the climate was too humid, and besides (he wisely informed me) that if alfalfa was allowed to go to seed the alfalfa would die out, as the pro-

duction of seed was exhaustive and destructive to the plant. When he told me this I showed him a sample of Ohio grown alfalfa seed, which was the best seed I ever saw. I had beside let an acre of alfalfa go to seed in 1904, and next year the plant came stronger and better than ever.

The seedman was talking for his business and his interests, and not for the farmer. Every Ohio farmer is deeply interested in the production of Ohio grown alfalfa seed. The seedmen are more deeply interested in preventing its growth, and they use every argument they can muster to discourage the attempt.

In 1904 Mr. Jos. Boardman, a neighbor, who has 20 acres of splendid alfalfa and who has never had a failure in securing a stand, stopped me in front of my place and showed me a letter from Director Thorne, of the Ohio Experiment Station, which said that alfalfa seed could not be grown in Ohio. I believed Mr. Thorne was wrong, and in his official capacity he had no right to give out such misleading information, with his limited knowledge. I told Mr. Boardman that alfalfa seed could be grown in Ohio, and I would prove it. I let an acre of my second crop on poor upland go to seed. It was cut and raked into windrows and left lying like clover. This was a mistake. The stem on which the seed pods form is slender and by exposure it easily breaks off and much of the seed was lost. It was hauled in and thrashed and yielded 79 pounds, but it was weather stained and of an inferior quality. The best seed was secured on

thin gravelly ground. The experiment convinced me that alfalfa seed could be successfully grown in Ohio when we learn how to handle the crop.

There has been considerable controvesry and I have been severely criticised and assailed because I have refused to bow down and worship at the dictates of a small clique that have presumed to issue their edicts upon all agricultural questions in Ohio, which they have clothed in the garb of infallible sanctity, and it has been treason for any farmer in Ohio to dare to do anything, to think or tell about it, without a written permit from these petty tyrants, who make a living by farming the farmers.

I do not mean to cast any doubt upon the work or discourage the good that has been done or that may be done by these great and wise men, when they confine themselves within the scope and purpose of the laws which gave them official existence.

But their findings are not always final, and they are open to question and criticism like ordinary mortals, and when they step outside of their legitimate functions to bully and assail and pout and cry because someone dares to do different from them, having taken their place upon the firing line they must expect shot for shot. Their opinions are not sacred, and if they were, these persons would become so arrogant that both themselves and their work would be useless.

As far as the growth of alfalfa in this state and the Ohio Experiment Station is concerned it has been 10 years behind the times, and Ohio farmers have been

compelled to seek information upon this all important topic from the stations in other states. It is only recently that, spurred by the success by farmers and the agricultueal press, that the Ohio Station has issued its first bulletin giving any information, aid or encouragement to the growth of alfalfa in Ohio.

Last year John C. Conine, of Gilboa, Putnam County, Ohio, raised three acres of alfalfa seed. He cut the first crop for hay in June, and let the second crop go to seed. It was cut in September, and after being cured for two days was hauled to the barn. It thrashed out 10 bushels of seed—this equals the average yield in Kansas. After cutting the seed a crop of hay came on, and in October he cut a crop of hay, after a crop of seed, but in doing this he made a mistake and injured his stand, for after cutting the seed he ought to have permitted the growth to remain to protect the plant during the winter. The seed was bright yellow, large, round and plump. It was as fine, clean, alfalfa seed as I ever saw. It was on exhibition at the Ottawa fair, and the Ohio Experiment Station purchased some of it.

The second crop is the crop for seed in Ohio. The first is too rank and there are too many weeds in it. Crops after the second will not mature seed.

High rolling clay and gravel land will produce the best seed in Ohio.

Rich black loam and bottom land will produce plants, but not seed. The rainfall and the weather

are more favorable for producing a crop of alfalfa seed in Ohio than in Kansas.

A thin stand of alfalfa will produce more and better seed than a thick stand. On the latter the attempt to produce a seed crop will often be a failure, when the crop is a certainty on a thin stand. When it is proposed to let a crop go to seed the field ought to be disked after the first hay crop is cut, to kill weeds and conserve moisture.

Alfalfa blossoms do not fertilize. Bees and other insects are necessary to pollinize the blossoms. Alfalfa blossoms afford the best of feed for bees and produce more and better honey than any other blossom. If you keep bees grow a field of alfalfa for seed.

Alfalfa should be cut as soon as the pods turn brown. You can not wait some seasons for all the pods to ripen, or the earlier pods will burst and lose the seed.

You can cut with a mower and rake into windrows after cutting, and leave a day to dry out, and haul to shelter, where the alfalfa will sweat and be ready to thrash. If the rain falls on the alfalfa it ought to be dried out before being hauled in, or the seed will mould and become discolored and injured. A good way to harvest alfalfa seed is with a binder, when the seed crop can be handled like oats and wheat and shocked up to cure for three or four days and then hauled to shelter. Some think the best way is to cut with a binder without binding, throw-

ing the alfalfa aside in bunches out the way of the team, so that the seed will not be trampled on and thrashed out.

In our climate alfalfa harvested for seed never ought to be stacked out. It means loss, damage and injury to the seed.

The seed can be thrashed with an ordinary clover huller. The straw makes good feed for all kinds of stock. Any kind of stock will eat the stems. After thrashing there will not be any leaves.

The seed should be sacked after thrashing and stored in a dry place free from rats and mice. Before selling, the seed should be thoroughly cleaned by running it through a fanning mill two or three times with riddles to remove the bad seed and dirt.

Alfalfa seed grown in Ohio is worth \$2 a bushel more than seeds grown in other states. Besides a crop of hay, a crop of seed may be raised during the season in Ohio, and the seed crop alone will pay \$30 an acre, and the seed find ready sale.

**Alfalfa as a Soil Renovator, Fertilizer
and Manure.**

(141)



SWEET CLOVER ALFALFA, RED CLOVER GROWN ON SAME PIECE
OF GROUND, SAME AGE, SHOWING DIFFERENCE IN THE ROOT
SYSTEM.

CHAPTER XVII.

ALFALFA AS A SOIL RENOVATOR, FERTILIZER AND MANURE.

The problem that confronts the thoughtful farmer of to-day is how to preserve the fertility of the soil and produce the largest crops at the least expense. For three generations our fathers taxed the rich, virgin soil with an utter disregard for future consequences; and we are paying the penalty. But the evil is a blessing in disguise. It is making us think. Common clover has been the mainstay of farmers in maintaining soil fertility, by crop rotation, but has become a very uncertain crop, and from many causes has become a failure and can no longer be relied upon.

Fortunately, alfalfa appears upon the scene at the needed time, and offers itself with all the elements essential to restore the mechanical condition of the soil by supplying abundant humus to admit air and light, and put the land in good heart, but in addition it is prolific in its miraculous capacity not only to produce the best paying crops, but at the same time it enriches the soil and restores worn-out soils that are too poor to produce any other crop, by supplying the elements necessary to plant life. This seems impossible. The ordinary man will

not believe it until he sees it demonstrated. But creation was begun by God, and he has placed man upon the scene and given him charge of the work, and creation is still going on. We are told that the age of miracles has passed away.. In agriculture the age of miracles has just dawned, and there are wonders being performed that have never been dreamed of in the farm philosophy of the past. To the farming industry the greatest miracle of the age is alfalfa.

The alfalfa accomplishes its beneficent and miraculous work by its marvelous root system. They go down deeper and quicker, when not sown too thickly, than any other forage plant known to man. The roots are subsoilers, opening up the soil to air and ventilation, and feeding on plant food beneath the surface, that has not been touched by the plow and exhausted by constant cropping and reckless methods.

For this reason alfalfa must take the place of clover, which is a shallow rooted plant compared with alfalfa. Red clover in rotation has been beneficial, a restorer of fertility and a soil renovator, but, owing to its shallow roots it has gathered its plant elements from the first 12 inches of the soil, until that has been exhausted, by the aid of clover, and the soil has become sick and weary, until it will no longer produce clover. For these reasons, great as has been the part red clover has played in maintaining fertility, it can not compare with alfalfa.

Fertility means the presence in the soil of the elements necessary to the production and vigorous

growth of plant life. We are told that there are 12 of these, which are more or less essential. These are oxygen, nitrogen, hydrogen, carbon, sulphur, phosphorus, potash, magnesia, iron, chlorine, sodium and silican. Of these the first 10 are essential, but the farmer has little power over the supply of six of them. The plant obtains carbon from the air, and this, with oxygen and hydrogen, the plant can supply itself, if conditions are proper and the other elements present to promote plant growth. Sulphur, iron and magnesia and usually lime are always in the soil in quantities sufficient for plant life and growth. This leaves three elements, nitrogen, phosphorus and potash, which constitute the trinity of soil fertility. When these are absent the soil is dead. When scientific investigation demonstrated this fact, these elements were supplied by artificial means, and fertilizers became a commercial proposition, and farmers have been spending millions of dollars annually for these elements and neglecting the manure in their barnyards. There is no commercial fertilizer ever made that can equal manure in maintaining the humus, life and fertility of the soil. Using fertilizer is like drinking whisky. It may stimulate, increase and promote crop production for a while, but without manure it only hastens the depletion of the fertility in the soil. No soil, however rich in chemical elements, can produce crops unless it is in such mechanical condition through the presence of humus and

organic matter, and by cultivation, as to enable the growing plant to assimilate such food as is needful for its perfection.

The manure pile is the successful farmer's bank account. He can have his check honored every time he draws one. It is his chemical laboratory that will produce each year more bacteria than was ever charmed to life by the scientific wizard in all the laboratories of the world.

In 1905 Ohio farmers spent \$2,228,190 for 230,615,398 pounds of fertilizers. Last year I heard Mr. M. C. Thomas, of Mingo, Ohio, in a lecture before a Farmers' Institute, make a statement, with illustrations, showing that in a ton of fertilizer costing \$22.00 there was only \$10.40 worth of chemicals, and the farmer had paid \$11.60 for dirt and the privilege of buying the few chemicals alleged to be in the rest of the dirt. I believe this is a fair average of the amount of chemicals in all fertilizers sold in Ohio. The farmers of Ohio paid hundreds of thousands of dollars yearly for something they never got.

We have a law in Ohio pretending to regulate the sale of fertilizers. Every company selling a fertilizer in the state must have a license for each brand, and must pay so much, \$20.00 or \$25.00, for each license. This money must be paid to the Secretary of the State Board of Agriculture. It is used to pay four inspectors. Each company must furnish an analysis of each brand of fertilizer, and in addition a sample of each brand for analysis, which are made

and paid for by the state Board. Each firm is required to place upon every sack a statement of the chemical that they claim it contains. They do this with eager celerity. So honest, noble and conscientious are the fertilizer philanthropists who do business in Ohio that in the 20 years the law has been in effect there has never been an arrest of a fertilizer firm or agent for violation of the law. The Secretary of the State Board of Agriculture is not a state officer, and yet under this law he is the only person empowered to bring suit for its violation or take steps for its execution. It is a wonderful law. It is a fake upon its face. It was not passed to protect the farmer from frauds, but to protect the fertilizer man from the farmer. The fertilizer companies pay so much spot cash to be permitted to sell their goods without annoyance, and they get what they pay for. Any surplus from the license fund goes into the treasury of the Board. If a farmer wants a fertilizer analyzed it costs \$3.00 for the four principal elements, or \$12.00 for an analysis. This was put in the law to keep the farmer from clamoring for justice. I used to buy fertilizers, and was swindled. I took a sample to Secretary Miller, and he had it analyzed. It was not licensed, and it did not come up to the analysis on the sack. I was asked to make affidavit by the Secretary and declined. It was his business to prosecute, and not mine. I bought no more fertilizer. I used alfalfa manure and got more chemicals to the ton necessary to restore soil fertility,

with bacteria and humus, than can be found in the best ton of fertilizer that was ever made. The fertilizer law of Ohio is a fraud and an imposition upon the farmers. It was conceived in rascality, born in iniquity and has been executed solely as a hold-up and for the rake-off. The present Secretary of the State Board of Agriculture, Mr. T. L. Calvert, is an honest official. He has declined to take certain fees from the fertilizing companies that have found their way into the pocket of one or more Secretaries. The fault is in the law, and not the officer, but it is so framed as to subject him to constant and great temptation. Any law so framed is a crime, and can only come into existence through corrupt and dishonest legislators, who are looking for graft, and not to protect the people.

Kentucky has a law regulating the sale of fertilizers that protects the farmer. Every brand must be licensed, and each sack must contain a simple statement of the leading elements, such as nitrogen, which is the chief and most expensive and most necessary element in the economy of agricultural science. If any farmer has bought fertilizer and believes it does not contain the chemicals he thought he was buying he may send samples to the Experiment Station and have them analyzed at the expense of the state, without telling who sold or manufactured them. When the analysis is made and returned to him he forwards the guaranteed analysis on the sack, upon which the article is sold, and if there is

a discrepancy suit may be brought at once in any court in any county in the state. This is the kind of a law that we need and must have in Ohio, and we will have it just as soon as the farmers send honest men to the legislature and demand their rights.

But let us return to our glorious alfalfa.

According to Warrington, who is considered an authority:

"The average acre of wheat will remove from the soil 45 pounds of nitrogen, 23 pounds of phosphoric acid and 30 pounds of potash. These elements are quoted on the market at about 17 cents per pound for the nitrogen, 7 cents for phosphoric acid and 4 cents per pound for potash. This means that every acre of wheat removes from the ground about \$7.65 worth of nitrogen, \$1.61 worth of phosphorous and \$1.20 worth of potash. That is a total of \$10.46 for each acre per year.

An acre of oats will consume 50 pounds of nitrogen, 20 pounds of phosphorus acid and 40 pounds of potash. This takes from the soil for each acre every year \$8.50 worth of nitrogen, \$1.40 worth of phosphorus acid and \$1.40 worth of potash, a total of \$11.50 from each acre per year.

The average acre of corn takes from the soil 80 pounds of nitrogen, 30 pounds of phosphorus acid and 70 pounds of potash. This means that if both fodder and grain are removed, the soil is robbed of \$13.60 worth of nitrogen, \$2.10 worth of phosphorus acid and \$2.80 worth of potash, a total of \$18.50 per acre.

Fifty acres of tobacco will drink up nearly \$18,000 worth of the soil's plant food in 20 years. Thousands of acres that formerly produced tobacco in southwestern Ohio are as dead as brick yards. You can see why constant cropping without returning anything to the soil so speedily exhausts the fertility.

In estimating the cost of producing a crop we never figure in the elements of fertility that the crop carries off and this is the largest item of expense. This is the reason that reckless farming by tenants is proving so injurious to our farm lands.

A ton of alfalfa contains 40 pounds of nitrogen, 10 pounds of phosphorus acid and 32 pounds of potash, the three essential elements of fertility. Last year, in the fifth year one acre of my alfalfa yielded ten tons of alfalfa which contained 400 pounds of nitrogen, 100 pounds of phosphorus acid and 320 pounds of potash. These figures are so prodigious that I am absolutely afraid to print them. It seems almost impossible, but scientists say that it is so and the feeding backs up the chemist and his laboratory. The Utah Experiment Station in a feeding test found that it took only 7,182 pounds of alfalfa hay to produce 705 pounds of beef, while to produce the same amount of beef it took 9,575 pounds of timothy, 11,967 pounds of red clover and 10,083 pounds of shredded corn fodder. The value of manure depends upon the character of the feed, and alfalfa manure is richer in the necessary elements of fertility than manure produced from any other forage plant.

But here comes the problem: If alfalfa takes away so much of these elements how can it do it without depleting the fertility of the soil? The answer shows that alfalfa is a miracle in agriculture. A colored neighbor who was driving by when I was harvesting my fourth crop last year, said, "That stuff must be powerful wearing on the soil." When I told him it left the soil renewed and richer he scratched his head, smiled and drove on. I don't think that he believed what I said but he was too polite to say what he thought.

The main or top root of the alfalfa goes straight down, as may be seen in the illustration of young alfalfa plants. This root continues to go down as the plant grows, and the root is always longer than the plant on top of the ground. This root is the power house of the plant. Its mission is to look for moisture and food to keep the machinery in motion. As the plant matures it begins to put out lateral roots, eight and ten inches long in all directions, but the object of these roots are not to gather food or moisture, but to discharge the surplus, that the plant cannot assimilate or use.

The plant above the ground gathers nitrogen from the air and carries it down to meet the water and chemical food which the main root is bringing from the dark earth beneath. The first eight inches of the root system is a fertilizer factory, combining the elements from the air and the earth for the plant's use, and carrying off the surplus to deposit it in the surface

soil. I think the cause of the yellows in young alfalfa is because the main root and top have produced more of the chemical elements than the plants can digest. When the small lateral roots have performed their mission they die, but as soon as conditions arise and the combination and supply of the plant is greater than the plant can digest, new roots are sent out to discharge the surplus in the soil. The reason the plant is helped by cutting hastens the development of the lateral roots and the plant again takes up its normal functions and becomes strong and vigorous. The nodules we read so much about, always form on the lateral root system and never on the main root. An alfalfa root when first dug up has a strong smell of chemicals on the first eight inches.

This process of putting out lateral roots which die and are renewed goes on during the life of the plant and the soil in an alfalfa field is constantly being renovated and enriched with those valuable elements—nitrogen, phosphoric acid and potash.

The fact that all alfalfa fields when used for other crops produce double what they did before, is well known to all men in the fertilizer business, and the general growth of alfalfa in Ohio means to enable farmers to restore and maintain the fertility of the soil without spending his money for fertilizers. It means to increase his profits and reduce his expenses, by making the farm independent of the feedman and the fertilizer men.

The false and malicious warfare that has been made

to prevent the growth of alfalfa in Ohio is a natural fight of selfish men to protect their own interests and make the farmers pay tribute year after year, to secure corporate dividends and make millions.

For the reasons given alfalfa is the best cover or nurse crop that can be planted in young and old orchards. It brings up fertility and moisture to the surface soil and feeds the growing trees. Cutting the crop for hay pays the way, with splendid returns and does not exhaust the fertility like other crops.

Alfalfa in Rotation of Crops.

(155)



ALFALFA ON BOTTOM GROUND, FLOODED AND HEAVED OUT.

CHAPTER XVIII.

ALFALFA IN ROTATION OF CROPS.

At the Farmers' Institute, a gloomy John, who belongs to the class of men who would trample a blessing under foot, to grab a calamity by the coat tail, and embrace it as a long lost twin brother, said, "If we all go to raising alfalfa, the market will be overstocked, and we can't get any thing for it." Hardly. You can't raise too much alfalfa. One acre of alfalfa will feed as much stock as ten acres of any other grass or forage, and when you have got it, you don't have to plow and plant each year. This saving in labor alone is a tremendous item. More alfalfa means more stock. It means to double the number of horses, cattle, sheep and hogs in Ohio. It means to fit them for market at much less cost, than with other feeds. It means an increase to the farmer's profits. It will enable him on high priced land to compete with the Western farmer. It means to restore the fertility of the soil. It means to increase the amount of manure, and to double its value. This means to save a million of dollars a year to Ohio farmers in fertilizers alone. Alfalfa will become the prime and most important factor in crop rotations.

Red clover has been the main stay in crop rotations in maintaining soil fertility, but it is an increasing fail-

ure on all kinds of soil. Alfalfa will take its place, renovate the land so that it will be possible to grow red clover again.

Of the million of acres of tillable land in Ohio in 1905 117,166 acres of clover sod were plowed under for manure. The most prosperous agricultural counties in Ohio are those that plowed under the most clover in crop rotation. Darke County, the most productive county in Ohio, with a large German element, plows under 16,779 acres annually for manure. This is a thousand times more than is plowed under by some counties, but the results can be seen in the magnificent yields of all cereals and tobacco in Darke County.

In a majority of the counties less than a thousand acres are plowed under. As a rule, the counties that plow under the least clover purchase the most fertilizer. These methods must stop, or Ohio will soon become kankrupt, as far as her agricultural interests are concerned.

Alfalfa in rotation of four or five years, on all but our hill farms, will remedy this growing evil. Once the hill farms get a stand of alfalfa it never ought to be disturbed.

This year we plowed up the first piece of ground that I planted in alfalfa. It had been in alfalfa four years. It was turned into permanent pasture and after the cattle were on it a year the alfalfa all disappeared except upon the crest of a hill. The ground has been discribed—"It is high, gravelly, heavy clay."

Several attempts were made but I could never raise a grain crop on it that would pay for the seed. It was planted in corn on the 11th of May this year. The result is amazing. The best corn on my place, or that I have seen anywhere, is on this clay gravel clay hill. I am writing this in July and the corn is tasseling out while much of the corn around it is only knee high. The corn on the hill is stronger and better than that in the creek bottom, which is Miami loam. Some of this land has had manure applied, but where the alfalfa sod was plowed under the stand is a foot higher and much stronger and the corn will be heavier and better.

Here I wish to make a prediction that will be realized in Ohio in ten years.

Alfalfa will take the place of wood pulp in the manufacture of all kinds and grades of paper. Thousands of tons raised in Ohio will be used for this purpose, and the supply will not equal the demand. I have predicted this for two years and I have been laughed at. I will laugh later. Frank Carpenter, who is now in Africa, writes that English paper makers are buying alfalfa, and have warehouses at many of the northern ports to store and ship it to England to use in making paper and it makes a higher and finer grade of paper than wood pulp. Alfalfa sells for this purpose at ten dollars a ton in Africa.

Alfalfa will be used in the place of the higher grade of woods to make furniture and for inside finishings, etc. It will be pressed into logs and sawed

into planks. It will take on a glaze and make a hard surface that will equal in color and beauty our richest walnuts and maples.

I just want to make this prophesy, so that when I am dead and gone, somebody will dig it out of some forgotten library and nail it on my tombstone.

Besides, this volume is so serious that I want to slip in a few lines that the hired scribblers and other parasites may have something to laugh at.

On a farm in Monroe County, Kansas, a field that had been in alfalfa for three years, was plowed and sowed to wheat. The first crop in 1900 yielded 40 bushels to the acre and in 1901 the second crop yielded 41 bushels per acre. Adjoining fields on the same farm with the same soil yielded only 15 bushels to the acre. Isn't the alfalfa a marvelous plant? How much fertilizer? Or what kind of fertilizer can do this? None that was ever made.

Prof. B. C. Buffum, at the Wyoming Experiment Station, selected an area of land and seeded one-half of it to alfalfa. The alfalfa was allowed to grow on this land for five years. The other half of the area was cropped with grain crops and potatoes in a rotation for the same five years. At the end of this time the entire area was plowed up and planted to field crops. The yield of wheat on the alfalfa land was sixty per cent greater than on the other, and the grain weighed more to the bushel.

The yield of oats was forty-eight per cent greater on the alfalfa land, the grain stood a foot and a half

higher, and the heads were two inches longer. The yield of marketable potatoes was increased sixty-two per cent on the alfalfa land; the potatoes averaged larger in size. The yields per acre were as follows:

	Alfalfa land.	Other land.
Wheat	30 bushels.	18 bushels.
Oats	78 "	37 "
Potatoes	81 "	52 "

The increased yield of crops on land on which alfalfa has grown does not come alone from the addition of plant-food to the soil which alfalfa makes. In many soils the mechanical improvement made by alfalfa has a greater influence in increasing the yield. Alfalfa roots are large and abundant, and they penetrate deeply. When alfalfa is plowed these roots decay, adding vegetable matter to the soil, and providing a passage for the air to go down to the subsoil and loosen it. On stiff clay lands this addition of the vegetable matter mellows the soil; on sandy lands it helps bind the soil particles together. On both classes of soil the addition of decayed vegetable mold increases the power of soil to absorb and retain moisture and make better tilth."

This evidence could be swelled into a volume. The testimony is marvelous as to the certainty and capacity of alfalfa as a restorer of the fertility of the soil.

Alfalfa sod is hard to break when the stand is heavy. It requires a sharp plow and a good team.

The plant does not have to be turned under to produce fertility. In Ohio hay can be cut in June, July and August, and the field then turned under for wheat. But the better way is to pasture the field close with sheep or cattle late in the fall, and leave it without protection during the winter when it will disappear. The roots rot in the ground and leave it full of holes and it can be more easily plowed in the spring and planted to corn, followed in rotation by wheat, then oats, after which alfalfa can again be seeded in July and cut the next spring and no time or crop will be lost.

Reseeding Alfalfa in Ohio.

(163)

CHAPTER XIX.

RESEEDING ALFALFA IN OHIO.

Where a stand has failed in spots, it is desirable to secure a stand on the vacant places, without plowing the whole field. This has been successfully done in Kansas and by Mr. Clark in Connecticut, by disking the field and reseeding the vacant spots. I have never tried it but if I wished to secure a perfect stand I would, but this is one of the problems that must be worked out by the practical and intelligent farmer in the future.

When an attempt has been made to secure a stand of alfalfa, and there has been a failure from any cause and there are only a few scattered plants, don't give up, and plant some other crop, as a neighbor of mine did this year. He didn't like the stand and plowed it up and planted millet. He planted alfalfa in May and he should have gone right back in the field in July and disked it and harrowed it and reseeded to alfalfa, and he would have increased his chances of getting a stand a hundred per cent. Now he will get millet to deplete the fertility of the surface of the soil and have more trouble than ever in getting a stand of alfalfa on that piece of ground. Don't be discouraged. Don't be a quitter. Other crops that you have grown have failed but you don't give up trying again for one

failure. If you have a mellow seed bed and cultivated until the weeds are killed and sow before a rain, you can't fail. If you do fail it is your own fault and not the fault of the alfalfa. It will grow most any place but in a duck pond.

**Alfalfa in the Towns and Cities of
Ohio.**

(167)

CHAPTER XX.

ALFALFA IN THE TOWNS AND CITIES OF OHIO.

There is not much market for alfalfa hay in Ohio towns. Misinformation and slanders about it as a feed have created a prejudice, but knowledge of its merit is slowly spreading and the livery and salesman, and the dairymen will soon refuse to buy timothy and clover when they can get alfalfa. Mow room is quite an item in the cities, a bale of alfalfa weighs from 20 to 40 pounds more than clover or timothy and contains three times as much feed, occupies less space and less labor to handle. Alfalfa does not constipate horses like timothy and does not make them slobber like clover.

In every town and city in Ohio there are idle lots, growing up in unsightly weeds. These can all be planted in alfalfa and the ordinary city lot will produce enough feed if planted in alfalfa to feed a horse or cow for a year, thus saving feed, paying taxes, saving money and adding to the beauty and healthfulness of the neighborhood. These lots are usually well drained and well adapted to the conditions required to produce alfalfa.

Prof. H. F. Rauh of Ottawa, after an alfalfa lecture four years ago, came to me and said he had two city lots and asked if they would produce alfalfa, and

if it would pay to plant it. I told him yes, gave him such information as I could and urged him to plant alfalfa. He did so. He got a stand without any trouble, and for three years he has fed his cow on the feed produced on those two lots and has made the lots more than pay the taxes.

Alfalfa and Moisture.

(171)

CHAPTER XXI.

ALFALFA AND MOISTURE.

There is one marvelous function that the alfalfa plant performs that has been entirely overlooked by the scientific men and writers, and that is its power to bring up the moisture and disseminate it in the atmosphere, increasing the rainfall and aiding vegetation not only in the immediate vicinity but afar off.

Every alfalfa field is a pond of water.

Two or three years after I started to growing alfalfa my attention was drawn to this feature and I began an investigation. I had a field of corn with alfalfa on two sides of it. During a dry season in 1903, when there was no dew and little humidity in the air I was surprised to find the jewels of dew sparkling in the corn every morning. I did not understand where it came from or what caused it. Upon reading I was told that a tree covering four hundred square feet would draw up and evaporate four tons of water a day. This is a part of nature's plan, which is so perfect and beautiful in all of its operations, for drawing the water from the earth to supply the air with moisture and sustain vegetation. As I became familiar with the habits of alfalfa and saw how deep rooted it was, I found that the top or main root was a pump drawing the moisture from the hidden recesses of the earth for

the growing plant to use and dissipate the surplus in the air. An acre of alfalfa will evaporate twenty tons of water a day. I have tried to induce the scientific gentlemen, who draw large salaries, to solve such problems, to make a study of the question, but being a clodhopper my suggestions were scorned.

Several years ago I wrote to Prof. A. M. Ten Eyck, of the Kansas Experiment Station, and asked him if any thought had been given to the subject of the increased rainfall, with the rapid increase of the acreage of alfalfa in that state. He said no investigation had been made of the subject, but there was no doubt that alfalfa had influenced the rainfall.

The state of Kansas was once the bottom of a vast ocean. It slopes gradually from the Rocky Mountains to the east, with a fall of eight feet to the mile. The streams disappear in summer, but the land has underground streams. In many places water has been secured by artesian wells for irrigation purposes. The alfalfa has tapped these hidden sources, and daily pumps millions of tons of water into the air. Years ago winds from the southwest used to sweep over Kansas and burn up the crops. Since Kansas has such a vast acreage of alfalfa this disaster has not happened, and not only Kansas but the whole Mississippi Valley has been benefitted by this phenomena, owing to the vast acreage of alfalfa in the Western states.

After studying this problem I wished to see if facts drawn from different sources would sustain this con-

clusion. First I secured from the Kansas Experiment Station statistics showing the growth of the alfalfa. In 1887 there was no alfalfa grown in Kansas. In 1890, 12,000 acres were reported and this has increased by leaps until last year there were 1,200,000 acres of alfalfa grown in Kansas. The authorities of Kansas Station kindly sent me the weather reports, showing the rainfall for twenty years, and the rainfall has increased during the years that alfalfa has been grown and a striking confirmation of the theory I have presented and that alfalfa has induced the increased rainfall is that this increase is entirely during the growing months from May to September.

The average rainfall in Kansas for twenty years from 1887 to 1906 was 27.77 inches. For six years from 1887 to 1892 the average rainfall for the state before the introduction of alfalfa, was as follows:

	Inches.
1887	23.07
1888	24.17
1889	29.47
1890	20.65
1891	30.90
1892	29.06

The total rainfall for this six years was 157.22 inches, a yearly average of 26.22 inches or nearly an inch less than the yearly average for twenty years. The annual rainfall for the last six years, since the extensive growth of alfalfa in the state was as follows:

	Inches.
1901	22.15
1902	35.50
1903	33.46
1904	32.86
1905	32.09
1906	29.48

The total rainfall for this period was 185.54 inches, or 28.32 inches more than in the period before alfalfa was introduced. The average in the latter period was 30.92 inches, or three inches above the twenty-year average. In three out of the six years in the first period the heaviest monthly rainfall was in August, ranging from four to six inches. In five out of the six years of the last period the heaviest monthly rainfall was in the month of May and June and ranged from 6 to 8 inches. There is no such increase or fluctuation in the months when alfalfa is dormant, between October and March.

I am convinced upon investigation that our scientific friends will find that the extended area of alfalfa has caused the increase in the rainfall.

In Ohio we are told that we have skinned the earth of the forests and the water has run off and caused a change in the climate and lessened the available humidity in the air for the forces of nature to send forth in frequent and gracious showers to refresh vegetation. Alfalfa on our hill sides in southern Ohio will repair this mistake. The fields of alfalfa will hold the moisture and prevent the water from

running off and washing the soil and carrying the fertility off of the land into the streams. In growing and dry seasons alfalfa will bring the moisture up from the earth and discharge it in the air, to refresh vegetation and encourage its growth.

When the world was created it was turned over to man, and he must use his brains to carry on the processes of nature and when nature halts the remedy is waiting for man to lay his hands upon and compel nature to co-operate with him to produce the results he desires to accomplish.

Alfalfa and Farm Values in Ohio.

(179)

CHAPTER XXII.

ALFALFA AND FARM VALUES IN OHIO.

There is no factor that will play a more important part in the value and prosperity of the agricultural interests of Ohio than alfalfa.

There are thousands of acres of land in Ohio, that have been valuable for their timber. The land has been cleared of this, and has little value for farming purposes. Much of this land can be had for \$10 an acre. Every acre of it that can be touched by the plow and tickled with a disc harrow will produce alfalfa worth fifty dollars an acre per year. In alfalfa this land will become the best sheep country in the world. It will maintain stock of all kinds. The prosperity of the West has come solely through alfalfa, and the man that grows it. Thousands of acres of sandy, clay soils in Kansas and Nebraska were sold for from \$2 to \$5 until it was found that they would grow alfalfa and these lands are now selling for from \$30 to \$75 per acre. Those lands used to rent for \$1 an acre and when seeded in alfalfa rent for \$5 an acre. Alfalfa will increase the selling and rental value of land. It will pay the taxes. It will bring improvements; it will satisfy the landlord; it will make the tenant more prosperous and happy; it will make better

homes and better men and women. We can not comprehend the wide and surprising influence that such a plant will exert upon society, civilization and on our people.

In Conclusion.

(183)

CHAPTER XXIII.

IN CONCLUSION.

I have written—I have tried to write all I know—all I have learned by failures and successes—by digging in the dirt, by hard toil and constant study. It is not much, but it is the best I can do, and if I can induce my brother farmers to grow alfalfa my work will not have been in vain. I never expected to write a book on alfalfa. I shall be assailed for doing so. But that “still small voice” that Socrates heeded kept prodding me and saying “Write!” “Write!” “Write!” It pulled me to the task, and I have written.

Since the task was begun some cheese-paring pigmies have said “that I was not a scientific farmer.” I am not, but I am not afraid to work, and I prefer to go to good mother nature, like a child at the knee, and coax her secrets from her bosom, rather than waste my time listening to the chestnuts and prattle of the so-called scientists. I am tired of the arrogance and impudence of these self-constituted scientific saints who presume upon their ignorance and call it knowledge. They seem to think that they have a monopoly of wisdom, and no man can get into the storehouse unless they turn the key. As Job said:

"No doubt ye are the people, and all wisdom will die with you."

Since my life has become attached to the land and identified with its interests I view society from an entirely different standpoint and have a broader scope and view of the blessings of agriculture as the foundation of all progress, peace and prosperity. I have been surprised and my indignation has been aroused to find that the self-appointed agencies for aiding the farmer live by preying upon him, and deceive him by false pretenses. They thrive by farming the farmer. Every institution and agency created by law and supported by taxation to encourage agriculture is under the seductive and mercenary influence of corporate greed and legalized rascality. These parasites that live on and off the toil of the farmer are as busy as tumble bugs, rolling their little ball of manure down the great highway of progress, and think they are moving the world; but something will soon pass over them and crush the ball and bug in the dust, and then the farmer will come into his own.

The farmers' institutes of Ohio have been free, and it has been the only unbought forum in which the farmer has secured a hearing.

Time, with its rapid development of events, will soon demonstrate the truth of every statement I have made in this book upon the growth and possibilities and untold value of alfalfa in Ohio.

The skipping lambs and bleating sheep upon ten thousand hills; the busy, humming bees and insects

in the purple blossoms; the lowing herds of contented cattle; the sleek and well-fed horses; the crowing roosters and cackling hens; the thrifty swine filling the air with resonant grunt of satisfaction—will chorus in harmony the praises of alfalfa.

Go plant alfalfa.

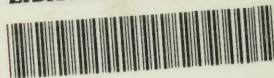
If you fail blame me.

If you succeed, as you will, lift up your eyes to the blue arch of heaven and join all animated creation in the song of gratitude and praise to the Bountiful Giver of All Good for the glorious gift of alfalfa in Ohio.

July 20, 1907.

SEP 11 1907

LIBRARY OF CONGRESS



00026850216